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ABSTRACT

The development of more detailed information about potential costs of post-high school education at less than the baccalaureate degree level was the purpose of this study. Fifteen comprehensive community-junior colleges in seven states were selected to provide input data on target population, patterns of financial support, anticipated support needs, and program cost differentials. To determine the cost of educating a student in particular curricula, six related studies were conducted. Following are some of the significant findings of the study. First of all, the potential student population by 1980 will range from 4.5 million to 12 million. In addition, junior colleges would require at least $6.2 billion (in 1969 dollars) by 1980, if one projects anticipated needs from current expenditures. In the past, local funds and student tuition have been the major sources of financial support; however, there appears to be a trend toward state support, and an increasing emphasis on federal funds. Finally, in analyzing the cost differentials of various programs, it appears that--except for business-related courses--occupational programs are more expensive to operate than general education programs. In some instances, the differential exceeds 100 per cent, and can be even greater if equipment cost estimates are included. (JO)

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THE COMMUNITY JUNIOR COLLEGE: TARGET POPULATION, PROGRAM COSTS AND COST DIFFERENTIALS

James L. Wattenbarger

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National Educational Finance Project

Special Study No. 6

JC 700 267

UNIVERSITY OF CALIF.
LOS ANGELES

DEC 16 1970

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THE COMMUNITY JUNIOR COLLEGE

TARGET POPULATION, PROGRAM COSTS

AND COST DIFFERENTIALS

The research reported herein was performed in accordance with terms of a contract under the general direction of the National Educational Finance Project.

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Lawrence Hinkle Arney -- A Comparison of Patterns of Financial Support With Selected Criteria in Community Junior Colleges

Harmon R. Fowler, Jr. -- Selected Variables Related to Differential Costs of Programs in Community Colleges

Lysle R. MacKeraghan -- A Conceptual Planning-Programming-Budgeting System for Community Junior Colleges

James E. Matthews -- A Study of Certain Input-Output Relationships in Selected Community Junior Colleges

George W. Corrick -- Resource Allocation in Selected Community Junior Colleges

Joseph Walters -- Selected Measures of Input-Output in a Community College as Evidenced by Visiting Committees in the Accreditation Process

FOREWORD

In the Dimensions of Educational Need, Johns, Alexander and Rossmiller have described the National Educational Finance Project. There has been much attention accorded the development of universal educational opportunity in the United States. The development of this concept has not been equal in all states, however, and while there are a number of factors which have influenced such development, the importance of financial support may be recognized in each state as having major influence upon educational opportunity.

The status of opportunity at the post high school level is most likely as varied among the states as is any level of education. While several states have provided strong and widely available opportunities, others serve only a limited portion of the total population. This satellite study of the Project was designed to focus attention upon a selected group of community colleges with the intent that they might be considered as examples or models of future growth and development. There are literally hundreds of community colleges which may be viewed as examples of the future direction in which development at this level will move. The limitations of time and resources, however, prevented us from examining all of these. A sample of such exemplary community colleges was selected and these have been used as basic sources of data upon which this study is based.

We are especially appreciative of the cooperation and concern demonstrated by these selected institutions. Their willingness to provide time and data to our research team exemplifies the fact that they are indeed exemplary community junior colleges. We are, in particular, indebted to:

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We are indebted to the excellent help from L. H. Arney, who completed the basic study on patterns of finance, and who made many of the field studies which were basic to this report. We wish him well in his new responsibilities at Western Carolina University.

We are also indebted to the graduate research assistants, Mr. Dean Hansen and Mr. Robert Hoskem, who provided much of the detailed work in producing the tables and the statistical analyses.

The related studies by Lysle R. MacKeraghan, James Matthews, Joe Walters and George Corrick provided enrichment to the study itself and the cost differentials information developed by Harmon Fowler constituted essential data for our conclusions. To these researchers we are specifically indebted. A special thanks to Dr. Gerald Boardman for his assistance in the development of a computer program which aided in the analysis of data.

The project has been interesting and, we think, worthwhile. We appreciate the chance to work on it.

James L. Wattenbarger and Bob N. Cage

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PART I

INTRODUCTION

The fall 1969 enrollment in community junior colleges in the 50 states represented a 12 percent increase over the fall 1968 enrollment in these institutions. Students were enrolled in 1038 institutions and totaled almost two and one quarter million persons. Public community colleges are now operating in all states except South Dakota. There are, however, about ten states where the development of community colleges has become widespread and would seem to represent the future directions of education at this level. Over half of the total two year college enrollment live in ten states; more than 95 percent of the enrollment in these ten states are in public institutions.

The community junior college has become an integral part of the public educational system in such states, and, therefore, examples or models of the future might be developed from examining such states. While it may be somewhat difficult to predict with absolute certainty the direction which represents the future of education at this level, the laws of probability would support the position of this study: that education at the post high school level of less than baccalaureate degree will follow the pattern exemplified in selected institutions which are representative of the best community colleges currently operating.

In using certain selected institutions as data bases, the following questions were considered:

1) What target population may be served in community junior colleges during the next few years?

2) What are the current patterns of financial support for community junior colleges?

3) What may be projected as the anticipated needs for supporting community colleges in the 50 states?

4) What are the cost differentials among the various programs in typical community colleges?

These questions served as the focus for this satellite study.

The selection of exemplary community colleges was a major task in the early development of this study. A description of the criteria used in selecting institutions is described later in this section of the report. An attempt was made to provide balance in this selection from the standpoints of geography, development, and service. Commonly understood purposes, goals, and philosophy were considered essential. The community junior colleges described herein may be defined as institutions, supported by public tax funds which are controlled and operated by a board either elected or appointed by a public official or agency and which offer programs or courses limited to the first two years of post high school education including programs parallel to the freshman and sophomore years of a baccalaureate degree granting institution, occupational education especially at the technical and mid-management levels, and continuing educational opportunities for those who have either graduated from high school or have passed the age of the usual high school student.

THE SELECTED COMMUNITY COLLEGES

There were fifteen institutions selected from seven states. These community colleges are characterized as exemplary community colleges because they represent in the opinion of the study staff and their advisors, the institutions which may be considered as examples of the best community colleges in these particular states. These colleges are described as follows:

San Mateo Junior College District

The San Mateo Junior College District was established in 1922 and classes began in a downtown campus with an opening enrollment of 35 students. The enrollment has grown until the district, under the chancellorship of Dr. Clifford Erickson, operates three colleges serving approximately 12,000 students. The College of San Mateo, under the presidency of Dr. Robert Ewigleben, is one of three colleges in the district. It is located on a 153 acre site where facilities have been constructed with a capacity for 8,000 students. The other two colleges in the district are Canada College and Skyline College. The rapid growth of the colleges in the district has been made possible by voter approval of a $5,900,000 bond issue in 1957 followed in 1964 by approval of a $12,800,000 bond issue. The master plan for the district includes a fourth campus. When the complete plan is implemented, San Mateo Junior College District will be capable of serving as many as 80,000 day and evening students.

This study is concerned only with the College of San Mateo which had an enrollment of 8,500 day students and 9,000 evening students in the fall of 1968. The college provides a wide range of program offerings including the Liberal Arts transfer and a large variety in technical and occupational areas. Noteworthy offerings in the technical and occupational areas are several aeronautic programs, eleven business programs, drama, nursing, and five technology programs.

State Center Junior College District (Fresno City College)

Fresno City College, established in 1910, was the first junior college in California. It opened that fall with three instructors and 20 students. The continued growth made a new campus desirable in the early fifties. The

campus of Fresno City College was acquired and by 1956 all the college divisions had moved to the new location.

In 1964 the junior college districts containing Fresno City College and Reedley College merged to form the State Center Junior College District. Under the central administration the citizens in the district were provided with additional post-high school educational opportunities.

This study is limited to Fresno City College, the enrollment of which in late 1969 was almost 11,000 students. The college, under the leadership of Dr. Stuart White, Superintendent of the District, and President Clyde McCully, has diversified offerings for its students. In addition to providing college or university transfer programs, there are 23 areas of study under the technical and industrial division which may lead to the Associate of Science degree. Among the technical and vocational programs offered are aeronautics, building technology, police science, radio and television, and vocational nursing.

An apprenticeship training program is offered in 22 areas including auto mechanics, electricity, electronics, horticulture, and machine shop. Ungraded classes are provided in building construction, electricity, food services, registered and vocational nursing, and plumbing and pipefitting.

With this diverse program, Fresno City College continues to grow. Plans are well underway to purchase several city blocks adjacent to the present campus for expansion and construction of needed facilities.

Miami-Dade Junior College

Activated by the Dade County Board of Public Instruction in 1959, Dade County Junior College began instruction on September 6, 1960. Since that time the junior college has functioned as a coeducational public two-year college supported jointly by the State of Florida and Dade County.

In February, 1963 the college name was changed to Miami-Dade Junior College.

The 1,400 students enrolled during the first year of operation and the 3,500 students who were served during the 1961-62 year met their classes in portable buildings on temporary campus sites. Enrollment in the 1963-64 college year, the fourth year of operation, exceeded 8,000 and Miami-Dade became the largest junior college in the South. By 1965-66 enrollment had risen to 16,981 making Miami-Dade the largest college in Florida with a five-year growth rate of 1,000 percent. The fall enrollment in 1968 was 26,349.

The wide variety of curricula offered cover numerous and diverse programs, aimed at the voluminous clientele being served. The college has expanded from a single campus to a multi-campus college. The North Campus, situated on a 245 acre tract is valued at approximately $20,000,000 and is the largest campus. Miami Beach Center, operated as a North Campus satellite, opened in 1965. Evening classes, both credit and noncredit, are offered at the center located in the Miami Beach Senior High School. South Dade Center in South Dade High School opened in the summer of 1968 as a South Campus satellite. Miami-Dade also operates the Homestead Center making credit courses and degree programs available to servicemen and their dependents at the Homestead Air Force Base in Homestead, Florida.

Dr. Peter Masiko, the current president of Miami Dade, reported that construction of a third mid-center campus called for in the master plan for multi-campus development is projected within the next three years. Tentative plans are that this facility will be a high-rise educational complex costing approximately $10,000,000.

This study considered only Miami-Dade North and Miami-Dade South campuses.

Daytona Beach Junior College

Daytona Beach Junior College was founded in 1958 to meet the broad post-high school educational needs of Volusia and Flagler Counties, Florida. Mary Brennan Karl, the college's founder, had realized the need for the establishment of a comprehensive school for many years. The college is the first institution in Florida to operate a program of a comprehensive nature as defined by the state legislature and recommended by the Community College Council.

The college is composed of three complete schools. They include the School of Arts and Sciences, providing the freshmen and sophomore years of the general educational requirements for transfer to senior institutions; the Mary Karl School of Applied Science which offers a broad range of occupational programs; and the School of Continuing Education to meet the varied needs of the total citizenry.

The School of Arts and Sciences provides the general education requirements for transfer to senior colleges and universities. Students working toward the A.A. degree may specialize in such areas as business administration, education, engineering, social science and many more.

The Mary Karl School of Applied Science offers a variety of occupational programs and courses which enable full-time and part-time students to acquire knowledge and skills that provide a wide range of employment opportunities. Associate Degree Programs, Certificate Programs, and short courses are all available in the School of Applied Science.

The School of Continuing Education extends the services of the Daytona Beach Junior College into the community. Adult educational opportunities include basic education, high school completion, cultural education and many more. The President, Roy F. Bergengren, Jr., states that the college

enrollment has grown from a few hundred in 1958 to over six thousand in 1968-69. When adult and continuing education participants are included the total enrollment is nearly 16,000 people. The current physical plant consists of twelve new buildings and six preexisting buildings.

College of DuPage

The College of DuPage was established under the Illinois Junior College Act of 1965. On December 4, 1965 the voters of ten high school districts in DuPage County, Illinois, voted to create the college. The Board of Trustees was founded in February, 1966, and Dr. Rodney Berg was appointed the first president of the college, and continues in this position today. On February 4, 1967, the Lyons Township Junior College District was annexed to the College of DuPage District. With this annexation the College of DuPage District became one of the most populous districts in the state of Illinois outside the city of Chicago with a total population numbering more than 600,000 to be served.

The college opened in September, 1967, with a total enrollment of 2,619 students. The enrollment increased by more than 50 percent the first year with the 1968-69 enrollment being 4,072.

After holding classes in rented facilities for two years most of the college operation moved to an interim campus building in September, 1969. A permanent campus will be developed on the college's 273 acre site with completion scheduled by late 1971 or early 1972. The campus will consist of a 7-building complex.

The College of DuPage is a comprehensive community college providing baccalaureate-oriented programs, technical-occupational programs, continuing education and community services. Satellite teaching stations, including several district high schools for the continuing education program, are

employed as a method of bringing educational opportunities to all district residents. Located in one of the wealthiest community college districts in the United States, the College of DuPage holds high potential for continuing as an exemplary institution.

Black Hawk College

Black Hawk College was founded in 1946 and existed for two years as an extension center of the University of Illinois. The Moline School District #40 took over its operation in 1948 and it was operated as Moline Community College until 1962. On June 1, 1962, following a successful referendum, Black Hawk College became the first area junior college district in the state. It also became the first multi-campus down-state junior college in 1967 with the opening of the Kewanee Campus.

Following passage of the Illinois Public Junior College Act in 1965 the Illinois Junior College Board certified Black Hawk College as a comprehensive college and gave it Class I status in the statewide system of junior colleges.

The enrollment at Black Hawk has increased from a few hundred students at its opening to 2,800 in 1968-69. Thirty percent of this amount is enrolled in vocational and technical courses. An additional four-hundred students, pursuing both transfer and terminal curricula, are enrolled at the Kewanee Campus.

Black Hawk College is a comprehensive community college which offers a transfer program, an occupation-oriented program, a general education program, and a community service program. The adult education program is an integral part of the community service program, offering courses on either a credit or non-credit basis. These courses are offered in the main campus, the Kewanee Campus, and in other sites in the supporting

community. The president of Black Hawk is Dr. Alban Reid.

This study is concerned only with the main campus and does not include an analysis of those programs offered at the Kewanee Campus.

Bristol Community College

Bristol Community College was authorized by the Massachusetts Board of Regional Community Colleges, its governing body, in December, 1965. The college opened its doors in temporary quarters at Fall River in September, 1966 to almost 500 students. The enrollment has increased each year and in the fall of 1968 there were 1,350 students enrolled. Over 1,200 of these students were enrolled as full-time students. Approximately one-third of the students were in career programs with the remainder enrolled in the transfer programs.

A master plan has been designed which calls for a new campus development on over 100 acres in Northeastern Fall River. The new campus will have facilities for over 2,000 students.

During the time of this study the college, under the leadership of President Jack Hudnall, had developed transfer programs and several career programs. Career programs of particular interest were several in the business area, an innovative child care program, several technical programs, and a police science program.

Massasoit Community College

Massasoit Community College is one of a state system of such colleges throughout the state under the Massachusetts Board of Regional Community Colleges. In September, 1966 it opened its doors to 358 students on a temporary campus. By the fall of 1968 the full-time day students numbered more than 1,100 and more than 700 students were attending evening classes.

With the ground breaking of a new campus in October, 1969, President

John Musselman is looking to the movement of the college into permanent facilities on 100 acres in Southeast Brockton. Phase I of the construction is due to be finished by September, 1970, and upon completion, accommodations will be ready for the present enrollment of 1,200 students. Phase II will need to be completed before the college can meet the educational needs of qualified students now being turned away for lack of space.

In addition to the transfer program, Massasoit Community College has career programs in business, electro-mechanical engineering, electronic engineering, and in nursing education. Programs in the planning stage include dental hygienist, dental assistants, legal technician, medical records and police and fire science.

Dutchess Community College

Dutchess Community College was founded in 1957 and in September, 1958 opened its doors to an enrollment of 250 full-time students and a part-time evening enrollment of 400. In 10 years the enrollment had grown to 1,900 day students and 1,890 evening students. The land on which the campus was built was a gift from the Board of Directors of the Samuel Nettie Bowne Hospital. The present campus consists of approximately 70 acres and five buildings.

Additional facilities needed within the next five years are currently being planned. The new building program includes provisions for more classroom and laboratory operations, faculty and administrative office areas, expanded food service facilities and materials service structures. Dr. James Hall, President of Dutchess, anticipates a steady increase in enrollment, reaching nearly 9,000 students by 1980.

Dutchess offers two-year university-parallel curriculums in liberal arts

and in engineering as well as curriculums in technical and business areas preparing graduates for immediate employment. The college also serves the adult community through its Office of Continuing Education by offering a variety of credit and non-credit courses which may be taken on a part-time basis. No vocational programs are presently offered at Dutchess, however, plans are being formulated to add some to the curriculum.

Monroe Community College

Monroe Community College is located on a 314 acre site in the town of Brighton, New York, 3½ miles from downtown Rochester. In the fall of 1967 3,031 day students and 1,978 evening students were enrolled. Approximately 4,000 day students and 2,500 evening students were admitted in September, 1968.

The college was created by the Board of Supervisors of Monroe County, New York, in 1961 and enrolled its first class of 720 freshmen in September, 1962. In 1967 construction of a $25,000,000 campus was well underway. The new campus was opened for classes in September, 1968 and consisted of 10 interconnected buildings to accommodate 6,000 full-time students. The president of Monroe is Dr. LeRoy V. Good.

Monroe Community College offers two-year university-parallel curriculums in liberal arts, science, engineering and business administration, as well as two-year curriculums in career, business and various technologies to prepare graduates for immediate employment.

There are no terminal vocational programs offered at Monroe, however, continuing education programs are available in the evening and summer.

Gaston College

The citizens of Gaston County voted a tax levy for a new college and a charter was granted to Gaston College on January 10, 1963 by the State

of North Carolina. The college began operation in temporary headquarters in the education building of Gastonia's First Methodist Church in September of 1964. In November of that year the college moved to its new permanent campus located between Dallas and Gastonia, North Carolina. Soon after the establishment of the college, arrangements for the merger of the Gaston Technical Institute and Gastonia Education Center with Gaston College were completed. This established Gaston College as a pioneer comprehensive community college in North Carolina. The president of Gaston College is Dr. Woodrow B. Sugg.

The campus contains four main buildings consisting of a classroom building, a library science building, a technical-vocational building and the administration building. Two relocatable classroom units and the art building are located at the rear of the campus near the athletic field.

The total enrollment for the academic year 1968-69 was 1,559 students. Approximately 35 percent of this number was enrolled in the vocational-technical programs, with the remaining 65 percent in a liberal arts program.

The programs offered by Gaston College include college parallel, two-year business programs, engineering technologies and a co-operative education program. Also, the Vocational Division of Gaston College offers one-calendar-year curriculums in the vocational-technical trades. Diplomas are awarded to graduates of the four-quarter programs in a variety of areas.

The General Adult Education Division offers courses, forums, and lectures to meet the educational needs of adults in the district. Extension courses are taught both on and off campus to help men and women update and generally enhance their knowledge and performance on the job.

A full program of evening classes in all divisions is offered to those students unable to attend during the day. Credits earned may be applied

toward any degree or diploma program.

Rockingham Community College

The Rockingham Community College was given approval by the citizens of Rockingham County in November of 1963. The residents of Rockingham County voted favorably on a bond issue for initial construction of the college and a tax levy for the support of the college. In January, 1964 the trustees of the college were appointed and in June, 1964 Dr. Gerald B. James was appointed president. He currently continues in that position.

The college began operation on its new campus at Wentworth, North Carolina in September, 1966. The 236 acre campus contains five buildings and has a current total investment exceeding $3,500,000. The beginning enrollment in the fall, 1966 was 641 students. The fall enrollment in 1968 was 1,387, more than a 100 percent increase in two years.

Rockingham Community College offers a variety of educational opportunities at the freshmen and sophomore levels for students planning to seek a baccalaureate degree at a senior college or university. The A.A. degree is awarded for successful completion of a college parallel curriculum.

The technical education program at Rockingham Community College is designed to prepare students for a number of basic positions in particular fields, rather than for a specific job. The technical programs are not designed for transfer to a four year college or university; the ultimate objective is employment and further growth through occupational experience. The Associate in Applied Science degree is awarded upon successful completion of a technical program.

Vocational education is also provided for students at Rockingham. The vocational curriculums are designed to prepare one for initial employability, to retrain for new skills, or to provide advancement within a

given vocation. Any of the vocational curriculums may be completed on a full or part-time basis.

One other phase of the college's program is Continuing Education. It is provided for the adults of the community in the form of workshops, institutes, conferences and exhibits. Adult basic education is an essential part of this program, also.

San Antonio College

On September 21, 1925, the University Junior College of San Antonio was formally opened with an enrollment of 200 students including 60 part-time students. The President of the University of Texas was authorized to furnish instruction and to exercise administration of the school with the Board of Education of the San Antonio Independent School District furnishing all the physical facilities. During the first year of operation classes were conducted in the old main high school building after dismissal of high school classes for the day. The operation of the junior college by the University of Texas however, was in violation of the constitution of Texas and the following year the San Antonio Board of Education assumed supervision of the college and it became known as the San Antonio Junior College. In 1926-27 the San Antonio Chapter of the American Association of University Women underwrote the financial needs of the college in order that it could continue its operation.

In 1930 the college was made a part of the San Antonio Public School System for a five-year probationary period, at the expiration of which community support brought about continued existence of the college. In 1942 control of the St. Phillips Junior College was transferred by the West Texas Diocese of the Episcopal Church to San Antonio Independent School District to be operated as a branch of the San Antonio Junior College.

The proposal of a union junior college district for metropolitan San Antonio was approved by a substantial majority in 1945. San Antonio Junior College and St. Phillips College passed from the control of the San Antonio Board of Education in August, 1946 and each college became independently existent under a newly created Board of Trustees. In 1948 the name was changed to the San Antonio Junior College District. This study will not be concerned with the program at the St. Phillips campus.

The enrollment at San Antonio College has increased steadily since its inception, reaching 12,100 students for the 1968-69 school year. Dr. Wayland Moody, President of San Antonio College, anticipates a doubling of this figure by 1980.

San Antonio College offers programs leading to the A. A. degree in liberal arts, business administration, engineering, music and several others. Vocational and technical programs are also available in large number, the student being able to qualify for the Associate degree or for the Certificate of Completion.

Adult Distributive Education Programs and Community Service Courses are also available. The majority of these programs are short courses designed to meet the needs of the business community.

Dallas County Junior College District

El Centro College was the first public junior college established in the Dallas County Junior College District. The citizens of Dallas County, Texas voted in May, 1965 to establish the district. When the original bond issue of $41,500,000 was authorized by a margin of more than three to one, plans were rapidly made to open a downtown campus. An empty department store was purchased and refurbished so that over 2,400 full-time day students could attend in the first year of operation. During the first

year there were also more than 4,000 part-time students served by evening and non-credit classes.

While plans have been made for six additional campuses in the Dallas Junior College District, this study is limited to El Centro College. The college offers a wide variety of post-high school educational opportunities. In addition to the Associate in Arts and Associate in Science degrees offered for college transfer, many programs leading to Associate in Applied Arts and Associate in Applied Science degrees are offered. Programs included in the Applied Arts and Sciences include architectural technology, associate degree nursing, chemical technology, culinary arts, data processing equipment operator, data processing programmer, dental assistant, medical secretary, operating room technology, and television and radio servicing, to name ten of the more than 30 choices offered.

The college has nearly reached the capacity for its present building with nearly 3,800 full-time equivalent students in the transfer programs and approximately 1,500 full-time equivalent students in those areas where there is a demand for competent practitioners. The total enrollment in 1969 approached 9,000 students.

Under the leadership of Chancellor Bill J. Priest, plans are being made for the district to provide additional educational facilities by 1971 so that 20,000 students will be able to receive instruction during the day. An additional 30,000 students could be instructed in evening classes.

Tarrant County Junior College

Tarrant County Junior College District was founded June 31, 1965 when voters approved the sale of $18,000,000 in bonds for capital outlay, elected a seven-member Board of Trustees and approved a tax rate for debt service and operations. The first president was named by the Board of Trustees in

September, 1965. In October of the same year the Board announced acquisition of three separate pieces of land for the multi-campus district and commissioned architects to begin planning the first two units. In May of 1966, construction began on the 158.5 acre site. By September, 1967, thirteen buildings had been erected and classes began in the fall term with an enrollment of 4,272. In the fall of 1968 eight buildings had been erected on the northeast campus site in time for fall classes. The total enrollment for both campuses was 7,427 in its second year of operation. In December of 1968 the college was given 193 acres of land in the northwest area of Tarrant County for the third campus. It has a scheduled opening date of 1973.

As a comprehensive junior college, Tarrant offers several types of instruction to meet a wide range of needs and interests. Under the direction of President Joe Rushing, the college offers two degrees--the Associate in Arts Degree for students who satisfactorily complete two years of a university parallel program, and the Associate in Applied Science Degree for students who satisfactorily complete a two-year technical or vocational program. A certificate of completion is awarded to students who successfully fulfill the requirements of a terminal program of less than two years' duration.

A program of basic studies is also offered providing general education and a broad cultural background for students.

The administrative unit for the college is separately located, being central to both of the campuses. Students may apply for admission to either campus, however, certain technical and vocational programs are confined to a single campus.

This study includes both the South and Northeast campuses, as well as

the administrative office in downtown Fort Worth, Texas.

METHODOLOGY

The major focus of this study was concerned with developing more specific information related to the projected potential costs of education at the post high school level of less than baccalaureate degree. The comprehensive community junior college which has developed in a number of states has been considered as the institutional designation for the total program of education at this level. These colleges serving students who want to 1) prepare for an occupation at this post high school level, or 2) study near to their homes for the first two years of their baccalaureate programs, or 3) continue their education beyond the level previously achieved before they entered adulthood may be expected to universalize educational opportunity at this level in a manner similar to that which has typified the development of high schools during the first quarter of this century.

One purpose of the study was to describe the target population which will be served in these institutions. A second purpose was to identify the costs of education at this level. Data which were used as normative guides in reacting to each of these purposes were obtained from careful study of the conditions exemplified by 15 selected institutions located in seven states. These institutions, selected with help from those who knew them best in each state, are considered to exemplify the direction of the educational role and scope which may be expected in the community colleges of the future. They are considered to be exemplary community colleges and are used as the major data base for this study.

Related Studies

Several related studies were also identified and were conducted concomitantly in a supportive relationship to the major study described herein. These included:

A study to determine those characteristics of state community junior college systems which have been recognized in the literature as desirable. The characteristics identified are as follows:

1. Post high school education is a public responsibility.
2. Equal educational opportunity for all who may benefit from it should be provided at the junior college level of education.
3. Community junior colleges should be sensitive to local needs; therefore, they should be controlled locally.
4. There should be a state plan for the junior college level of education coordinated by a state agency.
5. The state should assume an important role in the finance of the junior college level of education.
6. State support for the junior college level of education should be provided for both credit and non-credit courses.
7. The state should assume an important role in the provision of capital outlay for junior colleges.

The project staff then determined which of the characteristics would be stated as criteria to be used for selection of states to be included in this project.

The study also determined, with cooperation from state directors of community colleges or someone in a comparable position in each state, how well each state was promoting the desirable characteristics of community college systems referred to above. These data, gathered from the 50 states, were then used by the project staff to determine which states more nearly met the criteria for inclusion in the project.

The second study was to determine the differential costs of the transfer and vocational programs of selected community colleges and to identify variables which appeared to be related to the differential costs. The investigation was confined to a study of the unit costs of the educational programs in eight comprehensive community junior colleges chosen from among the fifteen community colleges selected in the major study.

The cost components used in this study were current operating expenses incurred for general administration, instructional salaries, other instructional services, operation and maintenance of plant, operation of the learning resources center, auxiliary services, student personnel services, and to a limited extent, equipment. The unit cost was determined by allocating the department, divisional and institutional expenditures to the courses taught. The unit cost of each course in a specific curriculum was summed to obtain the total cost of educating a student in that program. Using the average cost-per-student in the liberal arts program, cost differentials were computed for each institution. An average ratio was calculated for each curriculum and by type of curriculum in the eight schools.

A third study was to ascertain the extent of certain input-output relationships of selected community junior colleges. Eleven institutional input variables were identified for investigation. These consisted primarily of financial expenditures in specific areas, such as, instructional salaries, student personnel service, library, and president's salary. Seven community input variables consistent with the economic and social characteristics of the population of the community served were identified for investigation. These variables were used in an attempt to define operationally three of the major functions of the community junior college: college-parallel, occupational, and continuing education. After the

variables were identified, relationships between each input and each output variable were determined and implications of these relationships were developed.

A fourth study was conducted to determine whether a conceptual planning-programming-budgeting system (PPBS) model could be developed for a Florida community college. The major purpose of such a model was to provide a framework for identifying the costs of the community college's programs and to aid educational decisionmakers in the rational allocation of its fiscal resources.

An additional design goal of the model was to provide the baseline for developing:

1. Educational program and activity classification;
2. Program budgeting of the educational system's services;
3. Multi-year program planning;
4. System analysis of the effectiveness of an educational system's programs; and
5. A management information system to support these concepts.

The conceptual model was verified in a field application phase of the study and a set of intermediate PPBS program cost formats were developed to display a community college's program costs.

The fifth study was an investigation conducted as an exploratory study of the process by which the general operating budget is determined and compiled within community junior colleges. This process was conceptualized as a system of decision activity devoted to the allocation of financial resources. Investigation focused on the actor make-up of the system, actor roles and relationships, the sequence and flow of decision activity, and rules, information, and constraints in decision-making. Findings include

identification of a marked tendency to accept previous allocations as given, to assume the inevitability of increases, and focus decision-making on the margin of increase. Two separate decisions flows were identified, a hierarchically arranged flow that moves up through the organizational pyramid for determination of current expense and new personnel allocations, and a second flow wherein a faculty organization participates directly with top administrative officials in determination of salary and fringe benefit increases.

Models of primary decision range and flow models of decision activity are included in the study.

A sixth study sought to identify certain indicators of quality for public junior colleges through an analysis of peer evaluations of those institutions. The peer evaluations used in this instance were the visiting committee reports of accreditation visits to public junior colleges during the period 1960-69. Special attention was given to the recommendations and suggestions of those committees in order to determine the characteristics which accrediting teams apparently consider important indicators of the quality of those institutions. Consistencies and inconsistencies regarding specific characteristics were identified. The Commission on Colleges of the Southern Association of Colleges and Schools has granted access to its files for this study.

Emphasis

The primary emphasis in the design of the major study was an attempt to determine the cost of educating a student in a specified curriculum, and to utilize these data to demonstrate the relationship of the unit cost of each of several selected vocational-technical curriculums to the unit cost of a basic arts and science transfer curriculum. Previous studies (8, 30)

have reported the direct salary cost and total teaching cost per-student-credit hour for general courses and mean cost per-student-credit hour for specialized vocational-technical courses. Several studies and statistical reports (5,11,24) have shown the overall average annual expenditure per student in individual institutions. Studies (4,15,20,21,31) on a statewide basis that determined costs for specified curriculums in community colleges have received more attention as the need for statewide financial planning and program budgeting has increased. However, only one study (2) has reported the cost of educating students in a specified curriculum using information on a national basis. Anderson, the investigator in this study, reported substantial cost differences among curriculums. His findings showed that a majority of the vocational-technical curriculums offered in comprehensive community colleges cost more per student than liberal arts transfer curriculums in the same institution. Programs classified as industrial technical occupations had unit costs 1.52 times higher than unit costs for liberal arts transfer programs.

So that the staff of the major study could formulate the best design most appropriate for the study, an advisory committee of outstanding educators, knowledgeable in post high school education and research, were selected. The committee included Dr. Ernest F. Anderson, Dr. Richard C. Richardson, Dr. S. V. Martorana, Dr. Lee G. Henderson, Dr. William G. Shannon and Dr. Owen A. Knorr. These men met with the staff for a two day workshop at the beginning of the project, aiding in the selection of states, defining target populations, and in the development of the basic research design.

The major study has attempted to determine the cost of educating a student in each associate degree program in the community junior college,

especially as this cost is related to selected occupational and continuing education programs. The data from fifteen colleges in seven states have been utilized to determine these costs. The ratios formed by the comparison of costs have been denoted as cost differentials, using the cost for a basic (nonspecialized) Associate in Arts degree as unity.

The computation of the cost differentials were accomplished through the following steps:

(1) Identification of those states which met the criteria for inclusion in the study. The criteria which were used are:

A. The state supports a junior college system which has been in operation for at least three years.

B. Fifty percent or more of the states population live within commuting distance of a community junior college.

C. The state has a sound legal basis for establishing community junior colleges.

D. There exists a statewide Master Plan for the development of a community junior college system.

E. The community junior college system is comprehensive in nature: it offers the first two years of a four year baccalaureate program; it provides a variety of occupational education; and it offers a variety of continuing education programs.

F. State support for current operating expenses in the community junior colleges equals thirty percent or more.

G. The selected states are geographically distributed in order to be representative of the United States.

(2) Identification of those institutions which met the criteria for inclusion in the study. These criteria are as follows:

A. The community junior college offers a comprehensive program of studies including university parallel, occupational, and continuing education.

B. The community junior college bases its admission of students upon an "open door" policy.

C. The institution had an enrollment of at least 1500 students in fall, 1968.

D. The institution is recognized by the regional accrediting agency.

E. The community junior college consciously attempts to serve the target population in the district to the fullest extent.

F. The community college provides guidance and counseling services to its students.

The criteria described above were mailed to three persons in each of the states selected by the staff and the advisory committee. These persons were in some official position relative to the community junior colleges in each of those states. These individuals were asked to name up to five institutions which exemplified the criteria in their respective states. The two or three institutions in each state on which the panel of state leaders concurred were selected for further investigation. The staff assumed responsiblity for the final decision in making a choice of institutions which were requested to participate.

The following procedure was followed in obtaining institutional cooperation:

(1) A personal contact with each "exemplary" institution to gain permission to conduct the study was made by the project director.

(2) A visit was made to each institution to gather the following data:

A. Information related to each professional staff member, including position and salary for 1968-69.

B. A class schedule for each term for the 1968-69 fiscal year. This schedule was supplemented when necessary with information which provided the name and number of each section of each course taught, credit and contact hours for each course, the enrollment and the name of the instructor.

C. A 1968-69 college catalog which contained a description of each course and each curriculum which was offered.

D. A copy of the financial report for the fiscal year 1968-69 with all income and expenditures for capital outlay and current expenditures allocated to academic and vocational-technical departments insofar as records were available. This report was supplemented by other information which included total capital outlay for the existing site and grounds.

E. The number of students enrolled in each curriculum for the period under study, as well as the total number of students enrolled for the past four years.

F. Other pertinent data as was made available by the staff of the college.

When these data were collected from each of the fifteen colleges, the data were tabulated and analyzed to determine:

1. The average cost per student in selected degree programs in the university parallel curricula.

2. The average cost per student in selected programs in the occupational curricula.

3. A description of budgetary allocations which are currently being used as a percentage of the total budget.

4. The calculation of cost differentials for various degree and occupational programs.

Several component parts make up the total cost of educating a student. The components utilized in this study were the costs for general administration, instructional salaries, supportive instructional costs, operation and maintenance of facilities, student services, instructional resources, auxiliary services and capital outlay. These categories are consistent with those used by the Commission on Colleges, Southern Association of Colleges and Schools, in their 1969 report on "Current Operating Costs of Two-Year Colleges in the South" (22). Medsker also had a similar delineation of budgeting components in his 1969 report on the "Control and Support of Community Colleges" (18).

These component parts, except for capital outlay, are budgetary

allocations and were compiled from the year-end report for each college. Information concerning capital outlay was not available in all institutions, therefore it was not used in ascertaining the cost differentials.

Each component cost was depicted as a percent of the total budget for each division of each sample institution and these percents tabulated. A chi-square analysis was utilized to determine if the degree of difference in percent of budgetary allocations differed more than would be expected from random sampling in a population in which the component costs were equally distributed.

A major phase of the study was to describe the target population for community junior colleges through the projection of enrollments. A ratio of college enrollment to district population was calculated, then multiplied by a thousand to obtain the number per thousand being served by the college. This ratio was applied to the projected population in the district served by the college and provided a projection of the anticipated enrollment for the college for the selected years. The census figures for the district were compiled from the reports of the U. S. Bureau of the Census (28).

Enrollment data for 1968-69 and four previous years were obtained from each sample institution. These data became the basis for the projections through 1980 which were compiled.

INSTRUMENTATION AND DATA COLLECTION

The schedule used in collecting data for this study consisted of several parts (See Appendix A). The data collected in Part A consisted of the names, salary and courses taught for each faculty member as well as the enrollment for each term. Where information from internal records was

available, the expenditure by academic department and supporting services were recorded in Parts B-G.

Revenue for each community college was recorded in Part H. In those states where data on vocational-technical programs were reported separately, Part I was utilized to gather the enrollment and expenditures. Part J was used to obtain demographic data on the community college district, as well as information concerning percent of completions and attrition rates.

The schedule was used during a personal visit to each of the fifteen college campuses. At least two of the investigators were present for each visit, and on some visits the investigators were accompanied by one or more graduate assistants. Administrators, department heads and faculty members were visited on each campus. The majority of time was spent, however, with the business officers and registrars.

Other materials in addition to data on the schedules which were appropriate to the study were collected for future reference. Examples of these data are:

1. A college catalog for the academic year, 1968-69.
2. Brochures depicting curricula and other pertinent information for programs not listed in the catalog.
3. Self-studies which included cost analyses.
4. The budget report for the fiscal year under study.

Because the accounting system and record keeping across the sample institutions were not uniform, and because of the variations in state and local operations and control, data pertinent to the expenses for capital outlay was not always available. Examples of this were found in states where all equipment for community colleges is purchased and owned by the state; in other cases, especially true in older colleges, accurate, up-to-

date inventory lists which include the costs of equipment have not been accurately kept. Data summarizing the square footage of facilities, such as the classrooms, offices and other facilities were also not available in some institutions.

Most other studies in recent years pertaining to cost analysis have neglected to incorporate the cost of capital outlay. Another satellite study of the National Education Finance Project by W. Montfort Barr, et al. is concerned with financing school facilities and capital outlay. However, the emphasis is placed on the elementary and secondary schools.

Since the information relative to capital outlay was not consistant across all the institutions, for the purposes of this study the staff has chosen to determine a range of percentages for capital outlay which may be attributed to various programs. In the liberal arts program, for example, a range of percentages for the extra cost of equipment in the science and business programs were determined. For the vocational and technical curricula, three divisions were established based upon the size and cost of the laboratory associated with each program. This concept was adopted from the procedures used by the Florida State Department of Education, Division of Vocational, Technical and Adult Education.

Each program in the vocational and technical area was classified according to the size of the laboratory or shop; large, medium or small. The excess cost for implementing and maintaining a lab or shop in comparison to the cost of equipment for a general liberal arts program was ascertained. Utilizing the financial statement from each of the sample institutions, the current expense for the replacement of used equipment, the maintenance of equipment, and the purchase of equipment for updating new programs were

also ascertained. These expenses as a cost percentage of the total budget were recorded and presented as a range of percentages for the various programs, the range being determined as the difference between the highest and lowest cost percentage across all institutions.

PART II

TARGET POPULATION

The emphasis upon the growth of the community college represents a conscious effort to provide universal opportunity for post high school education. In several states planning has been carried out to make this goal of elementary and secondary education a goal of higher education also. The fifteen exemplary community colleges included in this study were selected because these particular institutions have been envisioned as indicative of future directions in the development of universal opportunity for education at this level.

The community junior college has undertaken the formidable task of attempting to provide for most of the post high school educational needs of the citizenry who may benefit from further education. Thornton has pointed out that the community junior college provides "...post high school education for all the children of all the people and for all the people too." (25) Although many community junior colleges have not as yet achieved this goal, the total population has been receptive to the goal itself as is evidenced by the tremendous growth of the community junior colleges during the last decade.

The Target Population

The community colleges of today cannot be content to serve only those who come to their doors of their own volition. The leadership of the colleges must realize the obligation to serve many of the post high school educational needs of the entire population of the college district. Who then are these people and what are their educational needs?

In a study of over 13,000 students in 10 junior colleges Medsker found

53 percent to be 22 or younger, 31 percent to be from 23 to 29 years of age, and 16 percent to be 30 years of age or older (19). A study of junior colleges in Florida conducted at approximately the same time found that full time students in the 16 to 22 age group comprised 69 percent of the junior college enrollment; the 23 to 29 age group, 15 percent; and the 30 and older group, 16 percent (23).

Even though the two studies indicated that over one-half of community junior college enrollments were in the age group generally considered to be of college age, a third to nearly half of a community college's enrollment could be expected to come from students over 22 years of age. Approximately one-sixth of the total enrollment could be expected to come from that segment of the population 30 years of age or older.

As colleges develop in such a way as to encourage more part time enrollments, these percentages may vary in the direction of a larger proportion of older students. This is illustrated by the fact that most part time students are working in regular jobs while taking one or two classes and have assumed responsible places in the work structure of their communities.

It is expected that the population of the United States in each age group will increase in number through 1980. The data in Table 2-1 indicate that the population in the age group of 15 to 24 is expected to increase 15 percent between 1970 and 1980. The population in the 25 to 34 age group is expected to increase 46 percent by 1980. The number of people in the over 34 age group is expected to increase 9 percent over the 1970 figure by 1980. In the total population of 15 years of age or older the increase by 1980 is projected to be 18 percent. Utilizing the Medsker report and the Florida study along with the Bureau of Census projection for population figures in the same approximate age groups gives an indication that there

TABLE 2-1

United States Projected Population by Age Groups
for 1970 and 1980

Age Group	1970	1980	Increase	Percent Increase
15 - 24	36,361,000	41,876,000	5,515,000	15
25 - 34	25,315,000	36,997,000	11,682,000	46
Over 34	84,363,000	91,618,000	7,255,000	9
15 and Over	146,039,000	170,491,000	24,452,000	18

Source: U. S. Bureau of the Census. Current Population Reports, Series P-25, No. 381.

could be an expected increase in community college enrollment based entirely on population age changes. As seen by examining the data in Table 2-2, one may note that only 19 percent of the over 14 population were in the 15 to 24 age group at approximately the time of the Medsker study and the Florida study. Only 16 percent of the over 14 population were in the 24 to 34 age group, but 64 percent were in the over 34 category. This is in contrast to the 1980 projection which forecasts 24 percent of the over 14 population in the 15 to 24 age group; 22 percent in the 25 to 34 age group; and, 54 percent in the over 34 age group. In the final analysis of this data it is evident that the age segment which has been producing most of the community college enrollment is increasing both numerically and in proportion to the rest of the post-high school age population. Even without taking into consideration efforts to serve broader segments of the population in existing community college districts or considering new community colleges in districts not now being served, there can be a projected growth of community college enrollment of nearly one-half million by 1980. However, this cannot be considered a realistic projection of enrollment as there are other vital factors to be considered as one may learn from examining the data from the exemplary colleges investigated in this study.

The Medsker study and the Florida study cited above indicate a diverse group of community college students as far as age factors are concerned. Cohen and Brawer point to other tendencies of heterogeneity among such students such as academic ability and socio-economic background (7). At the same time Cohen and Brawer hasten to point out characteristics of community college students where there is more homogeneity than heterogeneity, i.e., conformity and certain personality characteristics.

Another characteristic of some community college students is that many

TABLE 2-2

United States Population by Age Group and Percent of 15 and Over Population for 1960 and 1980

Age Group	1960	Percent of Population 15 Years and Over	1980	Percent of Population 15 Years and Over
15 - 24	24,583,000	19	41,876,000	24
25 - 34	22,911,000	16	36,997,000	22
Over 34	81,615,000	64	91,618,000	54
15 and Over	128,567,000	100	170,491,000	100

Source: U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 381.

students are married. Frequently both married partners are in school at the same time or one spouse may be working while the other is attending school. Medsker reported that in the six colleges in his study which reported on married students, 23 percent of the students were married (19). In the Florida study 26 percent of the community college students were married (23). This large percent of the total student body represented by married students causes a somewhat different view of education from a portion of the student body than if the entire student body were unmarried.

Community junior college students come from all socio-economic levels of society. Studies have indicated that in some community colleges there is a tendency to provide opportunity for a disproportionate number of families of the upper levels of society (10). However, Clark reported that at San Jose City College the student body was an almost exact duplicate of the social areas of San Jose (6). Thornton concludes that the junior college is, in fact, providing educational opportunity to those from less favored socio-economic groups and assisting in upward mobility of some of its members (25).

The part-time student is another type of college enrollee which is difficult to describe. He is generally in an "adult" course which has been offered primarily for those who are employed in full-time jobs. Nationwide, the part-time students made up 48 percent of public junior college enrollment in October, 1968 (14). These students range in educational accomplishment from those who have not completed high school to those with college degrees. These students are found in some classes which are offered for college parallel credit, in some which are vocationally or technically oriented, and in others offered without credit. They attend classes which are offered in both daytime and evening sessions; many take advantage of classes offered on Saturdays.

The students going to school part-time include housewives who want to improve themselves culturally, who want to become better homemakers and who wish to prepare for gainful employment. There are teachers enrolled part-time who wish to gain more expertise in areas outside their specialty. There are those who wish to change jobs and those who must change jobs as their old jobs become obsolete. There are those who are employed and find their opportunities for advancement blocked by lack of education. Finally, the senior citizen is represented by those who want to build upon an area of interest which had been postponed from younger and busier days. Some of the older students are there merely for the companionship found in those who share mutual interests.

There are also those students in a community college who have a clear view of what they wish to become and know how the college can help them to achieve this goal. These students in college parallel and vocational-technical programs who have determined their goals can readily be assisted in efforts toward those goals. Frequently students enter community colleges without clearly defined goals and must be allowed to find their niche in the educational world. Community colleges have been generally assigned a responsibility to assist these students to find the place for which they are best suited rather than to allow them to become disillusioned college dropouts forever haunted by an unnecessary failure experience.

What will be the population served by the community college of 1980? If it can be assumed that the precedent set by the exemplary colleges of this study will be replicated in other community colleges, then the community college of 1980 will have made provision to meet the post-high school educational needs of the population. This will include the young single people as well as members of the senior citizen group who suddenly find

themselves single again. Special programs for the married, for the full-time employed, for the disadvantaged, for the people whose jobs have become obsolete, and for those who just want to learn for the joy of learning will be provided.

The community college has undertaken to achieve what many considered to be an impossible goal, but the continued contribution of community colleges to society in general depends upon a determined persistence toward that goal. The provision of post-high school educational opportunity for all is the most important goal in the democratization of higher education and the junior college has been assigned a leadership role in accomplishing this goal according to Cross (10). This attempt to serve the post-high school educational needs makes it desirable to base projections of future community college enrollments on total population figures.

Community College Enrollment Factors

When one considers the opinions of the presidents of the 15 exemplary colleges included in this study in regard to future changes of the colleges, he discovers that 13 of the 15 presidents respond there would be substantial increases in enrollments in the occupational and career curriculums at their colleges. Most presidents thought that there would be changes in percent of vocational-technical students and college parallel students until a ratio of 1 to 1 was achieved.

Over half of the presidents indicated that adult and continuing education courses would continue to increase and that greater emphasis could be expected on mid-career vocational retraining in community colleges. This greater emphasis is envisioned as taking place along with more emphasis upon the community college responsibility for providing the first two years of study toward the baccalaureate degree. These presidents indicated that

they expected the major portion of four year degree students to begin their collegiate level work in a community college.

This basis for predicting an increasing community college enrollment is already operating in a number of states. The 1970 Directory of AAJC reports that in California 88 percent of the freshmen entering public colleges were enrolled in community colleges (14). The report also indicated about one-half of Michigan's first-time college students were enrolled in a two year college. The data in Figure 2-1, taken from the Florida Board of Regents Enrollment Reports, indicate approximately 65 percent of all first-time-in-college students were enrolled in public junior college in 1969. This can be compared with the percent of first-time-in-college students (29 percent) just ten years earlier. The trend toward more freshmen enrollment in community colleges is having a specific effect on community college enrollment. The large percent of freshmen college students enrolled in community colleges can be expected to increase in other states as each state's community college system develops according to existing plans.

Community College Enrollment Projection

The fifteen colleges in this study are listed in Table 2-3 along with the 1960, 1966 and 1968 college district population estimates and 1968 college enrollment figures. The most recent population estimates were utilized in a straight line projection to arrive at 1968 total population estimates for each of the districts. This figure was juxtaposed with that of 1968 college enrollments to arrive at the ratio of number of students enrolled per 1000 population in the districts. This ratio ranged from 3 per 1000 in one district up to 45 per 1000 in the college serving the largest proportion of its district's population. When the nine colleges

DOE:D/CC - 3/70
SOURCE: Board Of Regents Enrollment Rpts.

FIGURE 2-1

DISTRIBUTION OF ALL FIRST-TIME-IN-COLLEGE ON-CAMPUS STUDENTS
AMONG FLORIDA INSTITUTIONS OF HIGHER LEARNING
FALL 1957 -- FALL 1969

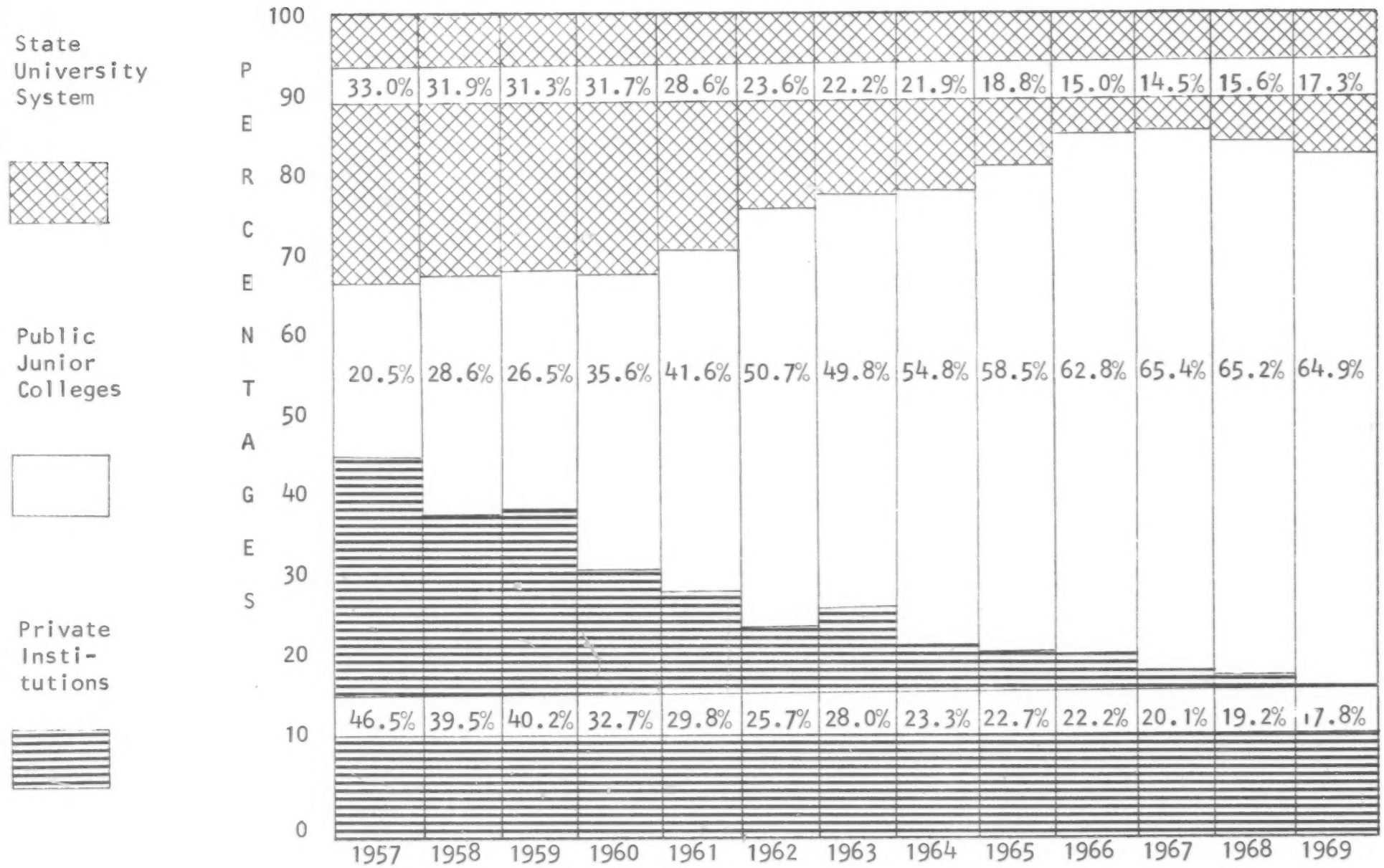

TABLE 2-3

Community College District Population Juxtaposed With College Enrollment

	Year College Established	1960* Population	1966* Population	1968 Population (Projection)	1968 Enrollment	Enrollment Per 1000 Population	Ratio of Student to Population
CALIFORNIA							
College of San Mateo	1922	355,154	411,348	430,079	17,795	41	1:24
Fresno City College	1910	463,829	531,410	553,937	10,168	18	1:54
FLORIDA							
Daytona Beach	1958	129,885	166,900	179,238	8,079	45	1:22
Miami-Dade	1960	935,047	1,084,300	1,134,051	26,305	23	1:43
ILLINOIS							
Black Hawk	1962	206,168	217,000**	217,000**	2,798	13	1:78
College of DuPage	1966	473,397	605,000**	605,000**	4,072	7	1:149
MASSACHUSETTS							
Bristol	1965	398,488	415,600	421,304	2,057	5	1:205
Massasoit	1966	503,577	590,950	620,074	1,863	3	1:333
NEW YORK							
Dutchess	1957	176,008	214,500	227,331	3,799	17	1:60
Monroe	1961	800,658	956,300	1,208,180	6,366	6	1:138
NORTH CAROLINA							
Gaston	1963	155,888	168,200	172,304	1,559	9	1:111
Rockingham	1966	69,627	71,900	72,658	1,387	19	1:52
TEXAS							
El Centro	1965	951,527	1,158,200	1,227,091	7,143	6	1:172
San Antonio	1925	580,298	669,878	699,738	12,102	17	1:58
Tarrant	1965	538,495	595,800	614,902	8,347	14	1:74

*U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 427, "Population Estimates and Projections: Estimates of the Population of Counties and Metropolitan Areas, July 1, 1966."

**Estimates of 1969 College District Population made by college officials.

which had been in operation more than three years at the time of this study are used, the mean ratio is 21 per 1000 and the median ratio is 17 per 1000 population.

If the same data are used to find the ratio of students in the community colleges to the total population in the district, the ratio varies from 1 to 333 down to 1 to 22. One of the colleges is serving one in every 22 citizens each year while, at the other extreme, one college is serving only one of every 333 citizens in the college district each year. In the nine schools which had been established prior to 1965, the median ratio was 1 to 58 and the mean ratio was 1 to 42.

Assuming that community colleges will continue to serve mainly the districts in which they are located, and furthermore, assuming that new colleges will be founded to serve additional districts, then one may expect that a much greater segment of the total population of this country will soon live in a place where a community college is accessible. If community colleges in general serve as well in the future as the exemplary colleges selected in this study are serving the local citizens, then it would seem reasonable to assume that the population of the entire country will be attending community colleges in a ratio approximating the mean given above.

The data in Table 2-4 represent the seven states in which the community colleges of this study are located. The latest enrollment figures from the AAJC directory are given for each of the states and for the United States. The Bureau of the Census estimates of population are given for each state and for the United States for 1970 and 1980 with both the upper and lower estimates given for each year. In employing the ratio of 20 community college students per 1000 population in each state and in the United States

TABLE 2-4

Estimated Number of Students Who Will Enroll in Community Colleges in 1970 and in 1980
If a Ratio of 20 per 1000 Total Population is Optional

State	Fall, 1969 Public Junior College Enrollment[1]		1970 Estimated Population	1970 No. of Students at 20 per 1000 Population		1980 Estimated Population	1980 No. of Students at 20 per 1000 Population
California	657,821	a	21,004,000	420,080	a	27,742,000	554,840
		b	20,657,000	413,140	b	25,343,000	506,860
Florida	110,178	a	6,654,000	133,080	a	9,019,000	180,380
		b	6,528,000	130,560	b	8,105,000	162,100
Illinois	122,579	a	11,131,000	222,620	a	12,837,000	256,740
		b	10,987,000	219,740	b	11,953,000	239,060
Massachusetts	23,850	a	5,555,000	111,100	a	6,284,000	125,680
		b	5,484,000	109,680	b	5,907,000	118,140
New York	168,596	a	19,162,000	383,240	a	21,988,000	439,760
		b	18,952,000	379,040	b	20,564,000	411,280
North Carolina	39,163	a	5,238,000	140,760	a	6,048,000	120,960
		b	5,167,000	103,340	b	5,588,000	111,760
Texas	97,778	a	11,452,000	229,040	a	13,606,000	272,120
		b	11,307,000	226,140	b	12,722,000	254,440
United States	2,051,499	a	206,342,000	4,126,840	a	242,307,000	4,846,140
		b	203,940,000	4,078,800	b	226,681,000	4,533,620

a U. S. Bureau of the Census, Current Population Reports, Series P-25, #375, "Revised Projections of the Population of States: 1970 to 1985," Series I, pp. 42-49.

b U. S. Bureau of the Census, Current Population Reports, Series P-25, #375, "Revised Projections of the Population of States: 1970 to 1985," Series II, pp. 42-49.

[1]Harper, Wm., Directory, American Association of Junior Colleges, 1970.

a projection is determined. If each state were providing community colleges and the colleges in turn were appropriately serving their citizenry, there would be an increase of over 100 percent in enrollment for the 1970 year compared to 1968.

It is unrealistic to believe that the 1970 fall enrollment figures will even approach the figures given here, but it is not unrealistic to believe that community college authorities will observe the work of the exemplary community colleges and develop programs which will be of service to the citizens of each college district. If ten years is considered a reasonable time for this to materialize, then the year 1980 should see a minimum of 4,500,000 people being served by community colleges.

This does not appear to be unrealistic in view of the fact that California, with approximately one tenth of the nation's population, already is serving approximately 30 students per 1000 population. Although California has reached this level, the only other state in the study which has approached a 20 per 1000 figure on a statewide basis is Florida.

The data in Table 2-3 indicated that two of the exemplary colleges of this study were serving more than 40 per 1000 of their population each year. The college with the best service record had reached 45 students per 1000 population. Table 2-5 contains the projections of population for the United States for 1970 and 1980. The data show student projections based on ratios from 20 per 1000 up to 50 per 1000 population. The data indicate that the community colleges in the United State should be serving a minimum of 4,500,000 students by 1980 if they will but attain the level of service of the exemplary colleges of this study. If community colleges are developed to be of service to all the communities in the

TABLE 2-5

Community College Projections for 1970 and 1980
Based Upon Various Numbers per 1000 Total Population

		1970	1980
U. S. Population Projections	a	206,342,000	242,307,000
	b	203,940,000	226,681,000
Number Junior College Students @:			
20 per 1,000	a	4,126,840	4,846,140
	b	4,078,800	4,533,620
30 per 1,000	a	6,190,260	7,269,210
	b	6,118,200	6,800,430
40 per 1,000	a	8,253,680	9,692,280
	b	8,157,600	9,067,240
50 per 1,000	a	10,317,100	12,115,350
	b	10,197,000	11,334,050

a U. S. Bureau of the Census, Current Population Reports, Series P-25, #375, "Revised Projection of the Populations of States: 1970 to 1985," Series I, pp. 42-49.

b U. S. Bureau of the Census, Current Population Reports, Series P-25, #375, "Revised Projections of the Population of States: 1970 to 1985," Series II, pp. 42-49.

United States and each community college is dedicated to provide the services of the exemplary college in this study reaching the highest percent of its community population, then community colleges could be expected to be reaching more than 12,000,000 people by 1980.

Such a figure as 12,000,000 community college students by 1980 may seem completely out of reason to some people. This figure would mean that 50 per 1000 or one person in twenty would be taking at least one course annually at the community college. One could say such a figure is not possible, but two of the colleges in this study have closely approached this figure and several of the newer colleges have facilities in the planning stages which would allow their districts to approach this ratio more closely than previously possible.

Community College Programs

There were several reasons which may explain circumstances where colleges in this study were not being of greater service to their communities: 1) Several were very new and had severe space limitations which made it impossible to offer programs to meet all of the community demands. In fact enrollment was controlled by an arbitrarily established ceiling in one college and would continue that way until new facilities were completed. 2) In a few colleges it appeared that where decisions had to be made in choosing alternatives in course offerings, the college parallel courses were assigned a higher priority. 3) The severe shortage of parking facilities may have been a deterrent to prospective students in at least two of the exemplary colleges. 4) A factor which affects attendance, particularly in college districts including large land areas, is location of college facilities on one campus beyond reasonable driving distance of much of the population. Several of the community college

districts in this study included geographic areas large enough to warrant two or more college campuses if educational opportunity is to be made more accessible to the population of the entire district. Many of the districts already recognized this and had several campuses and/or had plans for establishing additional campuses within the district. 5) Several of the college presidents in the study expressed concern over lack of the financial support which is required in order to provide for facilities and equipment for new technical and vocational curriculums which were identified as needed. As long as locally oriented occupational curriculums were omitted because of lack of finances, the colleges cannot provide for local needs as well as they should.

In spite of the above restrictions, all of the colleges indicated that their goal was to provide a place for all persons to pursue educational endeavors at the post-high school level. All of the exemplary community colleges included in this study proclaimed the open door policy of admissions. Each of them, however, also claimed to be able to guide each student into a program which appeared to offer the student a good chance to experience success.

The community colleges in this study were chosen, among other reasons, because they provided needed educational services to the people of their communities. All of the colleges provided strong college parallel programs with the Associate in Arts degree. There was a wide range of offerings, however, in pre-professional college parallel programs. Most of the colleges offered programs which would provide the first two years toward a professional degree in business administration, dentistry, education, engineering, medicine, nursing, and various other programs.

In the vocational-technical offerings, a group of programs was identified which was found in most of the colleges in this study. There were also programs identified which gave the indication that efforts were being made to offer locally oriented programs which meet unique local needs. Most of the schools offered a two year Associate in Science degree in business administration, secretarial science, engineering technology, electronics technology, and nursing. Other programs which were frequently offered were library science technology, civil engineering technology, cosmetology, electronics, data processing, automotive mechanics, machinist, mechanical drafting, welding, legal secretary, medical secretary, mechanical technology, law enforcement, fire science, food service technology, marketing, management, and building construction technology.

There were other offerings which indicated that local needs were being considered in selection of programs. Among those were the following: hotel-motel management, dental assistant, mortuary science, aero-technology, career pilot, air conditioning and refrigeration, fashion design, fashion modeling, instrumentation technology, interior design, radio-television broadcast technology, recreational leadership, court reporting, and transportation and traffic management. Many of the latter offerings may have been offered not only because of local need, but because the size of the school made it possible to offer a program serving not only the local college district, but a large portion of the state.

Certificate programs, usually one year in length, were offered. The most common one-year programs were welding, cosmetology, automotive mechanics, machinist, fire science technology, law enforcement technology, practical nursing, business data processing operator, as well as apprentice

training in many areas such as brick laying, carpentry, electrician, plumber and many others. The certificate programs helped make a broad service program more nearly a reality.

SUMMARY

The conscious effort exhibited by community colleges to provide universal opportunity for post-high school education has resulted in the development of a community oriented institution of higher education. The community service rendered by the fifteen colleges in this study are representative of the type of service community colleges of 1980 might be expected to provide. The community colleges will, in the next ten years, embrace an even broader segment of the community as the citizenry more nearly understands why the colleges were created and for what reasons they are continuing to flourish.

Predictions of community college enrollments for 1980, based on services rendered by the colleges in this study, are surprising. It was discovered that the colleges of this study which had been established prior to 1965 were providing educational services on an average to more than 20 per 1000 population in their college districts.

By making the assumption that the community colleges of the nation could reach the point of service already established in 1968 by some colleges, one is faced with the prediction of a community college enrollment of more than 4,500,000 by 1980. While this represents more than a 100 percent increase in enrollment, it is entirely possible that it may be on the conservative side. If community colleges were developed throughout the country accessible to all of the population; and if these institutions were providing for community educational needs as well as the college in

this study which renders the greatest service, community college enrollment in 1980 would exceed 12,000,000. At least one college has found a need for such extended services, perhaps many more colleges will find that the citizens of their districts have unsatisfied education needs which colleges should find a way to meet.

If the community colleges of this country are to reach the predicted increases in enrollment, they must continue to provide strong college parallel programs which will provide for an increasing portion of each state's total first-time-in-college enrollment. Expanded programs in the vocational-technical areas can be expected, especially programs with local orientation. Mid-career vocational retraining will continue to be provided by colleges as well as programs in the area of apprentice training and pre-employment preparation.

How can the community colleges do all that must be done to provide so much for so many? It is not an easy assignment, but there are community colleges in the country which are doing it now! We may expect others to follow.

PART III

PROGRAM COSTS AND COST DIFFERENTIALS

While it is an obvious fact that some occupational oriented programs are more costly than others, and most occupational programs are more expensive than a liberal arts, general curriculum program, the character and variety of this differential have not been as well described. Few studies have given adequate attention to these kinds of data. More interesting, however, is the fact that many colleges do not keep adequate cost information in such format that lends itself to the collection, analysis and evaluation necessary to ascertain the type of data needed for determining this differential.

The investigators in this study can report that although the data collected across the fifteen colleges were not always compatible in form, more than sufficient information was available to ascertain valid program costs and cost differentials for various programs.

Operating Costs

The data reported in Tables 3-1 through 3-9 show the average student credit hour cost, annual costs, and cost differentials for selected programs in each of nine colleges. The name of the college division or department, number of credit hours in each division, and the accumulated student credit hour division cost for each program are also given.

The cost differentials derived in this study are based on a cost per student credit hour associated with each two year program. As seen in Table 3-1, the average student credit hour cost for liberal arts (general curriculum) is $32.93. This was found by taking the total two-year expense ($2140.21) and dividing it by the total credit hours (65) of which the

TABLE 3-1

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE M

	Liberal Arts (General Curriculum)		Automotive Technology		Electronics Technology		Nursing Associate of Arts		Secretarial Science		Law Enforcement		Marketing and Mid-Management	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	180.78	6	183.39	6	183.39	6	180.78	12	380.64	9	287.07	6	195.06
Physical Science	6	140.61	4	138.52	4	153.00								
Social Science	12	331.92	6	172.44	3	90.39	9	255.36	6	165.75	3	82.05	3	82.05
Biological Science	6	147.09					8	257.56						
Mathematics	6	210.39	6	243.06	10	397.02			3	108.03			3	96.81
Foreign Language	12	549.66												
Physical Education	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56
Business Admin.			6	212.49					6	187.80			31	1687.76
Automotive Tech.			32	1317.68										
Engineering Tech.			4	151.54	6	224.21								
Electronics Tech.					37	2672.57								
Nursing							44	2462.51						
Secretarial Sci.									23	1136.59			2	97.90
Electives	15	451.20	6	196.56	3	91.44	3	110.31	3	91.44	12	393.06		
Accounting									6	212.82			6	212.82
Humanities									3	79.68			3	79.68
Law Enforcement											27	1080.90		
Psychology											3	83.70	3	83.70
Political Science											6	189.45		
Sociology											3	83.13		
Philosophy											3	89.61		
Economics													6	214.98
Totals (2 year)	65	2140.21	72	2744.24	71	3940.58	72	3395.08	64	2491.31	68	2417.53	65	2879.50
Annual Average	32.5	1070.11	36	1372.12	35.5	1970.29	36	1697.54	32	1245.66	34	1208.77	32.5	1439.75
Cost/Stud.Cr.Hr.		32.93		38.11		55.50		47.15		38.93		35.55		44.30
Cost Differentials		1.00		1.16		1.69		1.43		1.18		1.08		1.35

TABLE 3-1 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE M

	Business Management		Mental Health Technology		Mechanical Technology		Civil Technology		Associate of Arts (Science & Engineering		Building & Construction Technology		Hotel-Motel Management	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	12	380.64	9	282.00	6	183.39	6	183.39	6	180.78	6	183.39	9	276.96
Social Science	6	172.44			3	90.39	3	90.39	6	180.78	3	90.39	3	82.05
Biological Science			4	139.96										
Mathematics	3	108.03			6	224.10	6	224.10	20	682.40	6	224.10		
Physical Education	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56	2	128.56
Business Admin.	15	541.32											40	1737.61
Engineering Tech.					10	634.41	10	634.41	13	824.72	2	72.67		
Secretarial Sci.	5	185.17											2	97.90
Electives					6	233.22	6	233.22			6	283.56		
Accounting	6	212.82											9	385.32
Humanities	6	159.51	9	345.90					6	159.60			3	79.68
Psychology													3	83.70
Philosophy	3	89.61	3	123.81										
Economics	6	214.81												
Anthropology			3	74.49										
Art			6	201.96										
Mental Health Tech.			42	2482.40										
Civil Technology					11	763.08	33	2471.73			33	2287.01		
Chemistry					4	167.40	4	167.40	8	334.80				
Physics					4	153.00	4	153.00	8	306.00	4	153.00		
Machine Technology					16	1391.44								
Totals (2 year)	64	2193.08	78	3779.08	68	3968.99	74	4286.20	69	2797.64	62	3422.68	71	2871.78
Annual Average	32	1096.54	39	1889.54	34	1984.50	37	2143.10	34.5	1398.82	31	1711.34	35.5	1435.89
Cost/Stud.Cr.Hr.		34.27		48.45		58.37		57.92		40.55		55.20		40.45
Cost Differentials		1.04		1.47		1.77		1.76		1.23		1.68		1.23

program consists. The same procedure was followed for each of the programs in each college, obtaining an average student credit hour cost for each program. The average student credit hour cost for liberal arts (general curriculum) then became the divisor of a ratio formed with each program's average student credit hour cost, thus producing the cost differential for each program. For example, the cost differential for the automotive technology program is 1.16; thus the average cost per student credit hour is one and 16/100 more expensive in an automotive technology program than in a liberal arts (general curriculum) program. Another way of stating it is for every one dollar expended for a student credit hour in a liberal arts (general curriculum) program, $1.16 was expended for a student credit hour in the automotive technology program.

It should be noted that the cost differentials in this study are based on an average student credit hour cost rather than on an average annual student cost. Many of the occupational programs, when compared to the liberal arts programs, are from five to ten credit hours longer, thus if the cost differentials are figured on total dollars expended for a program, rather than on a credit hour basis, the cost differential is inflated. Also, most states fund community college programs on a credit hour basis rather than on a program basis. The cost differential that reflects cost, number of students, and credit hours in the program is the most appropriate. The reader should keep in mind that this ratio indicates only operating expense and does not include expense for site, plant and initial capital outlay.

All of the two-year occupational programs in College M, as well as the liberal arts (science and engineering) program, had cost differentials greater than one. As shown in Table 3-1, mechanical technology and civil technology with ratios of 1.77 and 1.76, respectively, had the highest cost

differentials. Business management, with a cost differential of 1.04, was the lowest.

The data for two-year technical and twelve month vocational programs in College A are given in Table 3-2. The highest cost differential for a two year technical program was 1.96 for chemical engineering technology. The highest differential for a vocational program was 1.40 for tool and die making. Three occupational programs had ratios of 1.00 or less. They were automotive and diesel mechanics, business science and secretarial science. It is unusual for a vocational program in automotive and diesel mechanics to have a ratio of one or less, but this apparently does occur when the enrollment becomes very large.

While this study has not attempted to identify or to analyze the variables which may be responsible for such cost differentials, the researchers are not unaware of the fact that these factors which influence quality must also be considered. The information on cost differentials is not an evaluative type of information and should not be viewed as such.

Four of the eight occupational courses in College N selected for study in this report were vocationally oriented programs. These programs, including automotive mechanics, machinist, mechanical drafting and welding, were offered for only four quarters compared to six quarters for the technical programs. The highest cost differential, as reported in Table 3-3, was 2.33 for mechanical drafting, while the lowest was 1.04 for business administration.

It is worthwile to note that when cost differentials are computed on a cost per student credit hour basis, programs that differ in length of credit hours are still comparable because of the use of the same base unit for comparison. Total program cost, when not taking into consideration

TABLE 3-2

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE A

	Liberal Arts (General Curriculum)		Business Science		Secretarial Science		Civil Engineering		Electronic Engineering		Industrial Engineering Technology		Mechanical Production Engineering	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	20	396.10	10	194.55	10	194.55	12	257.76	12	257.76	12	257.76	12	257.76
Social Science	10	164.15	15	276.80	5	66.30	6	131.61	6	131.61	6	131.61	6	131.61
Science	12	231.12												
Humanities	17	395.00												
Physical Education	6	168.72	3	54.63	3	54.63								
Mathematics	15	310.80					15	281.60	15	281.60	15	281.60	15	281.60
Business			63	1162.13	72	1411.68								
Engineering Tech.							75	2182.48						
Electronic Tech.									76	2107.82				
Industrial Tech.											75	2265.26		
Mech. Ind. Tech.													75	3067.48
Electives	17	334.56	5	98.40	4	78.72								
Totals (2 year)	97	2000.45	96	1786.51	94	1805.88	108	2853.45	109	2778.79	108	2936.23	108	3738.45
Annual Average	48.5	1000.23	48	893.26	47	902.94	54	1426.73	54.5	1389.40	54	1468.12	54	1869.23
Cost/Stud.Cr.Hr.		20.62		18.61		19.21		26.42		29.49		27.19		34.62
Cost Differentials		1.00		.90		.93		1.28		1.24		1.32		1.68

TABLE 3-2 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE A

	Chemical Engineering Technology		Electrical Engineering Technology		Air Conditioning & Refrigeration		Automotive and Diesel Mechanics		Electric Installation & Maintenance		Machinist		Tool & Die Maker	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	12	257.76	12	257.76	4	83.36	4	83.36	4	83.36	4	83.36		
Social Science	6	131.61	6	131.61	2	37.70	5	116.96	3	79.26	3	79.26		
Science	69	3507.68	12	294.56	4	70.00	12	230.04	8	143.36	8	143.36	3	64.41
Mathematics	15	281.60	15	281.60	8	161.72	4	79.28	8	161.72	11	278.93	12	330.36
Eng. Tech.	6	176.84												
Elec. Tech.			56	2748.10	4	88.44			47	1477.01				
Mech. Ind. Tech.			8	303.95	1	36.69	1	36.69	1	36.69	2	77.83	8	195.40
Air Cond. & Ref.					48	1192.32	4	99.16						
Welding					1	24.55	1	24.55	1	24.55				
Automotive							41	807.67						
Machine Shop											44	1261.06	49	1490.02
Totals (2 year)	108	4355.49	109	4017.58	72	1694.78	72	1477.71	72	2005.95	72	1923.80	72	2080.19
Annual Average	54	2177.75	54.5	2008.79	36	847.39	36	738.86	36	1002.98	36	966.90	36	1040.10
Cost/Stud.Cr.Hr.		40.33		36.86		23.54		20.52		27.86		26.86		28.89
Cost Differentials		1.96		1.79		1.14		1.00		1.35		1.30		1.40

TABLE 3-3

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE N

	Liberal Arts (General Curriculum)		Business Adminis-tration		Data Processing		Secretarial Science		Nursing Associate of Arts		Automotive Mechanics		Machinist	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	21	415.71	15	326.97	9	191.76	9	188.16	12	239.91	4	80.82	4	80.82
Social Science	16	304.79	7	139.73	7	140.15	8	147.15	26	425.38	7	135.53	7	135.53
Mathematics	9	150.45	6	140.43	19	500.08	5	141.75			5	106.80	15	366.36
Physical Science	4	80.36							3	60.87	8	198.16	8	198.16
Natural Science	12	226.24							13	243.00				
Language	18	381.21												
Physical Education	6	217.39					2	83.67						
Humanities	8	136.36					4	82.86	10	206.70				
Business			57	1204.53	20	546.83	70	1608.27			3	73.11		
Economics			9	179.73										
Nursing									44	2211.02				
Drafting													10	283.70
Mechanical Tech.											44	1535.49	36	1481.34
Data Processing			4	101.44	43	1834.58	4	101.48						
Vocational Core											2	47.50	2	47.50
Electives	6	141.41	6	132.48	9	206.34	6	122.91						
Totals (2 year)	100	2053.92	104	2225.31	107	3419.74	108	2476.25	108	3386.88	73	2176.41	82	2593.41
Annual Average	50	1026.96	52	1112.66	53.5	1709.87	54	1238.13	54	1693.44	36.5	1088.21	41	1096.71
Cost/Stud.Cr.Hr.		20.54		21.40		31.96		22.93		31.36		29.82		26.75
Cost Differentials		1.00		1.04		1.56		1.12		1.53		1.45		1.30

TABLE 3-3 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS
FOR SELECTED CURRICULA IN COLLEGE N

	Mechanical Drafting		Welding	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	4	80.82	7	143.58
Social Science	7	135.53	7	135.53
Mathematics	11	243.60	8	182.34
Physical Science	8	198.16		
Drafting	34	2518.70	6	437.76
Mechanical Tech.	14	590.04	4	102.28
Vocational Core	1	14.61		
Welding			38	1148.72
Totals (2 year)	79	3781.46	70	2150.21
Annual Average	39.5	1890.73	35	1075.11
Cost/Stud.Cr.Hr.		47.87		30.72
Cost Differentials		2.33		1.21

length of program, does not provide a reasonable and germane comparison.

A liberal arts program with a major emphasis in science had a cost differential of 1.07 in College C, compared to a liberal arts program with a general curriculum. The data in Table 3-4 also show that three programs, business management, secretarial science, and legal secretary had cost ratios equal to or less than one.

Chemical technology had a cost differential of 2.52, the highest for any of the programs studied in College C. Electronics technology and the nursing associate degree program were second highest with differentials of 1.77 each.

The cost differentials had a wide range in College K. These ratios, as enumerated in Table 3-5, show that police science was the highest at 2.20. The next highest was chemical technology at 1.86, with the lowest ratio for an occupational course being 1.01 for business administration.

The cost differentials for the occupational programs in College E range from unity to 1.58. This range is relatively small compared to other colleges in the study. The cost differential for mid-management training as listed in Table 3-6, is the smallest with the differential for supermarket management being the highest. Two programs for accounting were studied, each having a different emphasis in course content. Accounting with an emphasis in the humanities had a cost differential of 1.24, while with an emphasis in science, the ratio was 1.27.

The second highest cost differential was 1.50 in mechanical technology, which had a content emphasis on drafting and design. Mechanical technology with an emphasis on production showed the third highest cost differential at 1.38.

In examining Table 3-7, one notes that the data show rather consistent

TABLE 3-4

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE C

	Liberal Arts (General Curriculum)		Liberal Arts (Science)		Business Management		Business Data Processing		Secretarial Science		Legal Secretary		Medical Secretary	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	9	282.24	9	282.24	9	282.24	6	192.27	6	183.15	3	99.15	3	99.15
Social Science	21	522.66	12	300.18	3	93.06			6	142.65	9	194.85	3	75.75
Science	3	86.46	36	1287.67							3	70.59	9	310.20
Humanities	12	405.72					2	44.38						
Physical Education	4	137.20	2	69.84	6	197.56			4	131.16			4	131.06
Mathematics	9	323.10	5	170.17										
Business					45	1365.18	18	485.61	50	1507.14	47	1523.28	41	1365.42
Data Processing							41	2073.38						
Electives	6	209.13	6	189.48									3	90.87
Totals (2 year)	64	1966.51	70	2299.58	63	1938.04	67	2795.64	66	1964.10	62	1887.87	63	2072.45
Annual Average	32	983.26	35	1149.79	31.5	969.02	33.5	1397.82	33	982.05	31	943.94	31.5	1036.23
Cost/Stud.Cr.Hr.		30.73		32.85		30.76		41.73		29.76		30.45		32.90
Cost Differentials		1.00		1.07		1.00		1.36		.97		.99		1.07

TABLE 3-4 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE C

	Chemical Technology		Electronics Technology		Radio and Television Technology		Mechanical Technology Design		Mechanical Technology Production		Nursing Associate of Arts	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	192.27	6	192.27	9	324.78	6	192.27	6	192.27	6	192.27
Social Science	3	75.75	5	120.13	5	120.13	5	120.13	5	120.13	6	140.97
Science	49	4682.90	10	502.70	10	398.20	10	502.70	10	502.70	11	323.44
Physical Education					3	98.54					2	67.45
Technical Courses	13	541.79	49	2995.85	43	2720.22	49	2240.62	47	1987.82		
Nursing											34	2548.22
Electives											3	101.43
Totals (2 year)	71	5492.71	70	3810.95	70	3661.87	70	3055.72	68	2802.92	62	3373.78
Annual Average	35.5	2746.36	35	1905.47	35	1830.94	35	1527.86	34	1401.46	31	1686.69
Cost/Stud.Cr.Hr.		77.36		54.44		52.31		43.65		41.22		54.41
Cost Differentials		2.52		1.77		1.70		1.42		1.34		1.77

TABLE 3-5

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE K

	Liberal Arts (General Curriculum)		Business Adminis-tration		Secretarial Science		Data Processing		Retail Business Management		Police Science		Nursing	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	12	528.82	6	257.01	6	266.91	9	414.63	6	257.01	6	257.01	6	257.01
Social Science	15	609.00	6	241.53	6	241.53	6	241.53	6	241.53	6	241.53	12	476.70
Science	8	306.72	8	301.84	8	628.44	4	150.92	8	628.44	4	122.08	11	375.38
Humanities	22	968.00									6	271.83		
Physical Education	4	248.27	4	248.28	4	248.28	4	248.28	4	248.28	4	214.18	2	162.51
Mathematics	3	120.75					4	160.23			3	147.39		
Business			33	1417.73	39	1748.26	9	368.31	40	1739.21				
Data Processing							25	1619.20						
Police Science											29	4603.01		
Nursing													32	1788.00
Electives			9	405.06	4	180.32	6	277.05	6	270.48	6	248.43	2	90.16
Totals (2 year)	64	2781.56	66	2871.45	67	3313.74	66	3480.15	70	3384.95	64	6105.46	65	3149.76
Annual Average	32	1390.78	33	1440.67	33.5	1656.87	33	1740.08	35	1692.48	32	3052.73	32.5	1579.83
Cost/Stud.Cr.Hr.		43.46		43.65		49.46		52.73		48.36		95.40		48.61
Cost Differentials		1.00		1.01		1.14		1.21		1.11		2.20		1.12

TABLE 3-5 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE K

	Chemical Technology		Mechanical Design Technology		Electrical Technology		Architectural Design Technology		Commercial Art		Nursery Education		Medical Assistant	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	257.01	6	257.01	9	414.63	6	257.01	6	257.01	6	257.01	6	257.01
Social Science	6	241.53	6	241.53	6	241.53	6	241.53	9	386.86	12	491.04	6	241.53
Science			4	216.72	8	456.28			8	628.44	8	277.48	10	352.86
Humanities													6	251.85
Physical Education	4	248.27	4	248.27	4	248.27	4	248.27	4	248.27	4	248.27	2	162.51
Mathematics	4	247.64	7	380.39	13	743.39	4	247.64						
Business									2	80.18			11	581.95
Chemical Tech.	42	4122.76												
Mechanical Design			37	3517.87										
Electronics Tech.					33	2766.68								
Architectural Des.							43	3379.68						
Commercial Art									34	2432.96				
Nursery											28	2147.20		
Medical Assistant													14	1666.46
Electives	3	135.24					2	159.72	6	270.48	6	282.54	9	405.06
Totals (2 year)	65	5252.45	64	4861.79	73	4870.78	65	4533.85	69	4306.20	64	3703.54	64	3919.23
Annual Average	32.5	2626.23	32	2430.90	36.5	2435.39	32.5	2266.93	34.5	2153.10	32	1851.77	32	1959.62
Cost/Stud.Cr.Hr.		80.81		75.97		66.72		69.75		62.41		57.87		61.24
Cost Differentials		1.86		1.75		1.54		1.65		1.44		1.33		1.41

TABLE 3-6

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE E

	Liberal Arts (General Curriculum		Electronics Technology		Fire Science		Secretarial Science		Mid-Management		Data Processing (Business)		Data Processing (Science)	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	20	654.00	9	284.73	9	284.73	14	441.53	14	441.53	13	403.46	13	403.46
Humanities	20	626.90	13	393.25			5	151.25	5	151.25				
Social Studies	25	689.00	5	139.90	10	279.80	5	136.50	5	139.76				
Accounting									9	273.66	14	453.46		
Business Adminis.							59	2848.64	45	1315.05	51	1903.98		
Data Processing													50	2000.43
Engineering					3	195.15								
Psychology									5	136.50				
Life Science	10	395.10												
Mathematics	10	304.30	12	392.20	4	121.20					5	164.30	20	624.25
Physical Science	5	151.30	12	642.24	17	876.14			5	247.35			5	247.35
Electronics			53	2572.92										
Fire Science					45	2053.55								
Physical Education					3	118.53			6	243.54				
Electives							10	302.50	5	151.25	10	302.50	3	90.75
Totals (2 year)	90	2820.60	104	4421.24	91	3929.10	93	3880.42	99	3099.89	93	3227.70	91	3366.24
Annual Average	45	1410.30	52	2210.62	45.5	1964.55	46.5	1940.21	49.5	1549.95	46.5	1613.85	45.5	1683.12
Cost/Stud.Cr.Hr.		31.34		42.51		43.18		41.72		31.31		34.71		36.99
Cost Differentials		1.00		1.36		1.38		1.33		1.00		1.11		1.18

TABLE 3-6 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COST, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE E

	Mechanical Technology (Production)		Mech. Tech. (Drawing & Design)		Supermarket Mgmt., Food Distribution		Marketing Retail Management		Accounting (Humanities)		Accounting (Science)		Banking and Finance	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	14	431.63	14	441.53	14	441.53	19	605.03	9	284.73	14	441.53	14	441.53
Humanities			9	309.49	5	151.25			5	151.25				
Social Studies	10	275.60	5	151.25	5	137.80			10	274.30	10	137.80	10	137.80
Psychology					5	136.50	5	136.50			5	136.50	5	136.50
Accounting					6	180.99	6	180.99	22	825.50	22	825.50	9	273.66
Business Adminis.					30	959.35	53	2200.74	37	1625.56	34	1541.89	48	2028.39
Data Processing	5	225.15												
Food Distribution					26	2747.68								
Mathematics	12	292.20	12	292.20	5	138.70	5	138.70	5	138.70	5	138.70	5	138.70
Physical Science			15	830.35	5	247.35			10	494.70	15	742.05	5	247.35
Electronics	5	192.50												
Mechanical Tech.	49	2677.80	39	2405.47										
Physical Educa.			3	125.01	4	164.79							6	243.54
Electives					5	137.80	5	137.80					5	151.25
Totals (2 year)	95	4094.88	97	4555.30	110	5443.74	93	3399.66	98	3794.74	100	3963.97	102	3798.72
Annual Average	47.5	2047.44	48.5	2277.65	55	2721.87	46.5	1699.83	49	1897.37	50	1981.99	51	1899.36
Cost/Stud.Cr.Hr.		43.10		46.96		49.49		36.56		38.72		39.64		37.24
Cost Differentials		1.38		1.50		1.58		1.17		1.24		1.27		1.19

TABLE 3-7

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE H

	Liberal Arts (General Curriculum)		Accounting		Executive Secretary		Civil Engineering Technology		Mechanical Engineering Technology		Electro-Mechanical Technology		Nursing A.S. Degree	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	9	240.00	9	240.00	9	240.00	6	159.39	6	159.39	6	159.39	6	159.39
Social Science	18	476.46	12	316.20	12	316.20	9	244.98	9	244.98	9	244.98	9	287.07
Mathematics	3	78.15					8	231.76	8	231.76	8	231.76		
Biology	6	162.03											13	365.92
Foreign Language	12	398.40												
Humanities	9	262.53												
Accounting			21	595.89										
Business			12	344.25	6	164.49								
Management			6	164.79										
Science			3	76.41	3	76.41	8	230.36	8	230.36	8	230.36		
Sec. Science					33	1224.90								
Nursing													36	1676.94
Engineering							35	2099.28	31	1429.29	30	1135.20		
Computer Program.											3	75.03		
Electives	3	83.10					5	145.85	5	145.85	5	145.85	6	175.02
Totals (2 year)	60	1700.67	63	1737.54	63	2022.00	71	3111.62	67	2441.63	69	2222.57	70	2664.34
Annual Average	30	850.34	31.5	867.77	31.5	1011.00	35.5	1555.81	33.5	1220.82	34.5	1111.29	35	1332.17
Cost/Stud.Cr.Hr.		28.35		27.58		32.10		43.83		36.44		32.21		38.06
Cost Differentials		1.00		.97		1.13		1.55		1.29		1.14		1.34

TABLE 3-7 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE H

	Computer Programming		Business Administration Management		Business Administration Marketing		Electrical Engineering Technology		Child Care Worker		Secretarial Legal		Secretarial Medical	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	159.39	9	240.00	9	240.00	6	159.39	9	248.28	9	240.00	9	240.00
Social Science	15	403.11	12	316.20	12	316.20	9	244.98	12	312.09	12	316.20	12	316.20
Mathematics	12	329.10					8	231.76	3	83.10				
Biology													8	216.04
Child Care									18	559.62				
Humanities									6	159.51				
Accounting	9	244.38	15	473.19	6	161.13								
Business			9	271.20	9	271.20					6	164.49	3	87.36
Management			12	392.65	3	116.43								
Science	3	76.41	3	76.41	3	76.41	8	230.36	8	153.12	3	76.41		
Eng. Drawing							5	261.67						
Health									2	67.90				
Sec. Science											33	1344.90	33	1344.90
Nursing									3	86.04				
Engineering							29	1092.46						
Computer Prog.	18	894.57												
Marketing					18	732.27								
Electives							5	145.85						
Totals (2 year)	63	2106.96	60	1774.71	60	1913.64	70	2366.47	61	1669.66	63	2142.00	65	2204.50
Annual Average	31.5	1053.48	30	887.36	30	956.82	35	1183.24	30.5	834.83	31.5	1071.00	32.5	1102.25
Cost/Stud.Cr.Hr.		33.44		29.58		31.89		33.81		27.37		34.00		33.92
Cost Differentials		1.18		1.04		1.13		1.19		.97		1.20		1.20

cost differentials over all programs for College H. Accounting and child care worker both had ratios of less than one, indicating an average student credit hour cost less than for a general liberal arts program. Civil engineering technology had the highest ratio of 1.55 with the degree nursing program second at 1.34.

One of the highest cost differentials for any program in all the sample colleges was found in College F. Sheet metal worker, as seen in Table 3-8, had a cost ratio of 3.13, far exceeding the next highest ratio, 2.03 for Associate degree nursing.

General business with the lowest cost differential of .91 was the only program studied in College F that was less than unity, however accounting with a ratio of 1.03 was very low and the second lowest occupational program.

A further analysis of the curriculum for a sheet metal worker in Table 3-8 shows 28 of the 61 semester hours taken are in the sheet metal division. The extra cost in this division is the primary reason for the high cost differential.

The data for College O, given in Table 3-9, show all cost differentials for occupational programs to be greater than one. Police science with a ratio of 1.06 is the lowest and culinary arts (chef) with a ratio of 2.01 is greatest.

Respiratory therapy technology, with a cost differential of 1.89, and library technician, with a cost differential of 1.88, had the second and third highest cost per student credit hour. Both of these programs are found infrequently in community colleges and are relatively new in College O. They are but two of the new types of programs that are needed at the post-high school level.

TABLE 3-8

AVERAGE STUDENT CREDIT HOUR COSTS, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE F

	Liberal Arts (General Curriculum)		Accounting		Data Processing		General Business		Marketing		Medical Secretary		Nursing Associate of Arts	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Business Admin.			18	300.06	12	248.97	27	483.24	15	260.97	3	48.45		
Marketing									27	776.16				
Social Science			3	79.65							31	693.04		
Data Processing					24	1067.91	3	58.95						
Accounting			25	599.53	19	420.85	10	166.90	5	70.00				
English	6	120.00	9	197.25	6	129.03	9	197.25	9	197.25	9	197.25	6	127.41
Humanities	24	508.81												
Mathematics	6	150.00												
Natural Science	6	302.58									7	231.00	11	367.84
Social Science	12	206.32	4	60.58	4	60.58	4	60.58	4	60.58	7	108.01	13	203.95
Economics							6	110.01	3	62.07				
Physical Education			4	151.18	4	151.18	4	151.18	4	151.18	4	151.18	2	123.76
Nursing													41	2357.09
Electives									2	42.66				
Totals (2 year)	60	1287.71	63	1388.25	69	2078.52	63	1228.11	69	1620.87	61	1428.93	73	3180.05
Annual Average	30	643.86	31.5	694.13	34.5	1039.26	31.5	614.06	34.5	810.44	30.5	714.47	36.5	1590.03
Cost/Stud.Cr.Hr.		21.46		22.04		30.12		19.49		23.50		23.43		43.56
Cost Differentials		1.00		1.03		1.40		.91		1.10		1.09		2.03

TABLE 3-8 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS
FOR SELECTED CURRICULA IN COLLEGE F

	Aero-nautical Engineering		Archi-tectural Drafting		Automotive Mechanics		Electronics Technology		Mechanical Technology		Radio & Television Repair		Sheet Metal Worker	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	129.03	6	127.44	6	127.44	9	197.25	6	127.44	6	127.44	6	127.44
Mathematics			3	104.59					6	210.67				
Physical Science					3	62.34	3	62.34	8	193.84	3	62.34	3	62.34
Social Science	4	60.58	4	60.58	4	60.58	4	60.58	4	60.58	4	60.58	4	60.58
Physical Education	4	151.18	4	151.18	4	151.18	2	123.76	4	151.18	4	151.18	4	151.18
Radio & Television											28	1394.54		
Electronics							44	1639.33			6	117.90		
Aeronautics	48	1662.48												
Industrial Educ.	6	132.66	2	47.58	16	344.04	8	164.59	13	301.00	8	164.59	14	287.12
Drafting			26	862.45	3	76.68	3	76.68	5	207.42				
Building Tech.			15	827.67										
Mechanical Tech.			8	294.53					12	972.33				
Automotive Mech.					20	726.10								
Sheet Metal													28	3371.06
Electives	2	40.30			8	159.64			3	137.82	3	78.87	2	37.36
Totals (2 year)	70	2176.23	68	2476.02	64	1708.00	73	2324.53	61	2362.28	62	2157.44	61	4097.08
Annual Average	35	1088.12	34	1238.01	32	854.00	36.5	1162.27	30.5	1181.14	31	1078.72	30.5	2048.54
Cost/Stud.Cr.Hr.		31.09		36.41		26.69		31.84		38.73		34.80		67.17
Cost Differentials		1.45		1.70		1.24		1.48		1.80		1.62		3.13

TABLE 3-9

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE O

	Liberal Arts (General Curriculum)		Architectural Technology		Nursing Associate of Arts		Secretarial Science		Culinary Arts (Chef)		Data Processing Programmer		Dental Assistant	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	9	240.84	6	173.19	6	157.92	6	173.19	6	173.19	6	173.19	6	173.19
Social Science	3	69.57	6	137.76	6	139.14	6	137.76	6	138.42	6	149.31	6	137.76
Mathematics	6	166.86	6	155.91							6	180.30		
Science	6	96.18					6	182.94			6	190.89		
Humanities	6	198.54			3	83.73	3	83.73	3	83.73	3	83.73	3	83.73
Language	6	112.41							1	42.25				
Speech	3	95.85												
Biology	8	243.92			4	113.68							8	228.88
History	6	142.64												
Government	6	142.63												
Electives	4	100.24							9	290.85				
Drafting			20	903.81										
Engineering	8	307.09												
Physics			6	177.18										
Architecture			12	411.00										
Nursing					42	2046.60								
Psychology					6	143.19	3	71.55	3	71.55			5	119.25
Zoology					4	103.24								
Physical Education	2	59.66			4	133.63								
Chemistry					4	107.12								
Sociology					3	67.08								
Culinary Arts									26	2223.17				
Restaurant Opera.									6	227.94				
Data Processing											27	1449.16		
Business							15	427.17			9	226.83		
Philosophy											3	70.32		

TABLE 3-9

	Liberal Arts (General Curriculum)		Architectural Technology		Nursing Associate of Arts		Secretarial Science		Culinary Arts (Chef)		Data Processing Programmer		Dental Assistant	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Dental Assistant													34	2156.34
Typing							4	131.24					5	144.86
Secretarial Sci.							12	435.72						
Office Practices							5	175.16						
Totals (2 year)	62	1669.34	64	2265.94	82	3095.33	60	1818.46	60	3251.10	66	2523.73	67	3044.01
Annual Average	31	834.67	32	1132.97	41	1547.67	30	909.23	30	1625.55	33	1261.87	33.5	1522.00
Cost/Stud.Cr.Hr.		26.92		35.41		37.75		30.31		54.19		38.24		45.43
Cost Differentials		1.00		1.32		1.40		1.13		2.01		1.42		1.69

TABLE 3-9 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS
FOR SELECTED CURRICULA IN COLLEGE O

	Drafting & Design Technology		Electronics Technology		Library Technician		Medical Secretary		Mid-Management		Police Science		Respiratory Therapy Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	6	173.19	6	173.19	12	335.07	6	173.18	6	173.19	6	173.19	6	177.60
Social Science	9	206.58	6	137.76	6	137.76	6	137.76	6	137.76	6	137.76	6	137.76
Mathematics	6	155.91	6	155.91	3	96.18					3	96.18		
Science					6	183.18			6	172.33			4	114.84
Humanities	3	99.27	3	83.73	6	183.00	3	99.27	3	83.73	6	183.00	3	83.73
Biology							4	106.08					4	103.24
Government											3	110.58		
Drafting	22	964.07	2	68.18										
Engineering	11	496.00	2	98.92										
Physics	6	177.15	6	177.15										
Electronics			30	1122.63										
Psychology			3	71.55			3	71.55			6	144.63	3	71.55
Library Science					24	2074.00								
Typing					2	49.52	4	131.24						
Business					3	80.61	6	212.64	18	518.01			3	83.61
Medical Technology							13	861.70						
Medical Record Sci.							3	91.86						
Office Practices							12	414.98						
Mid-Management									20	863.52				
Economics									3	64.92				
Police Science											27	807.24		
Sociology											3	66.12		
Respiratory Therapy													39	2745.54
Data Processing													3	101.91

Table 3-9 (Continued)

	Drafting & Design Technology		Electronics Technology		Library Technician		Medical Secretary		Mid-Management		Police Science		Respiratory Therapy Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Totals (2 year)	63	2272.17	64	2089.02	62	3139.32	60	2300.27	62	2013.57	60	1718.70	71	3619.78
Annual Average	31.5	1136.09	32	1044.51	31	1569.66	30	1150.14	31	1006.79	30	859.35	35.5	1809.89
Cost/Stud.Cr.Hr.		36.07		32.64		50.63		38.34		32.48		28.65		50.98
Cost Differentials		1.34		1.21		1.88		1.42		1.21		1.06		1.89

In Tables 3-11 through 3-16 which follow on page 78, the data for program costs were computed on a department or division basis, rather than on a course basis as was done in the previous tables. This was necessary because of the record keeping procedures in these institutions. Either enrollment data, class schedules, or faculty salaries were not available from each of the the colleges.

This procedure provided the staff, however, with the opportunity to compare program costs and cost differentials computed under two techniques. The comparisons revealed that cost differentials computed on a course basis tend to be somewhat more refined and more accurate than cost differentials determined on a department basis.

An example to illustrate this point is demonstrated when the average cost of teaching all English courses is computed. A weighted mean is obtained based on a large number of students in the beginning English course but relatively fewer students in the advanced English courses. However, when costs are computed for each individual course, reflecting only the salaries of those instructors teaching the course and the exact number of students in the course, the aggregate program cost and resulting cost differential are much more exact.

The data in Table 3-10 show the cost differentials for selected programs in one college computed on a course basis and on a department basis. In all cases the ratios for programs computed on a department basis regress toward unity, thereby giving a more conservative cost differential. The difference is not great, but does illustrate the need for a good and accurate record keeping system in the junior college.

TABLE 3-10

Cost Differentials on a Course and Department Basis for Selected Programs of College K

Program	Course Basis	Department Basis
Liberal Arts	1.00	1.00
Secretarial Science	1.14	1.12
Business Administration	1.01	1.00
Data Processing	1.21	1.19
Nursing (Degree Program)	1.12	1.10
Chemical Technology	1.86	1.80
Mechanical Design Technology	1.75	1.70
Electrical Technology	1.54	1.50
Commercial Art	1.44	1.41
Medical Assistant	1.41	1.38

The data showing cost differentials for College B are given in Table 3-11. Several programs had ratios of less than one with accounting being the lowest at .85. The other programs with cost differentials less than one were general secretarial, electronics technician, law enforcement and mid-marketing management. The highest cost differential was aeronautical technology at 1.21, however, it should be noted that this program requires 89 credit hours, compared to only 64 for liberal arts. If one were to compare the two by total program cost, the cost differential would be 1.68.

The cost differentials for occupational programs in College J ranged from .95 for business administration to 2.13 for bio-engineering technology. As shown in Table 3-12, only the ratio for business administration was less than one, with the ratio for mechanics technology equal to one, and the

TABLE 3-11

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE B

	Liberal Arts (General Curriculum)		Accounting		General Secretarial		Aeronautical Technology		Automobile Mechanics		Electronic Technician		Nursing	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Business Adm.			27	783.81	9	261.27					3	87.09		
Office Occupations			9	324.00	36	1296.00								
Data Processing			3	151.20	3	151.20								
English	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98
Speech			3	94.62	3	94.62			3	94.62				
Humanities	6	364.50												
Physical Education	4	218.76	2	109.38	2	109.38	2	109.38	2	109.38	2	109.38	2	109.38
Mathematics	8	256.08	3	96.03										
Biology													7	255.71
Natural Science	8	321.36												
Physical Science							8	349.76	8	349.76	12	524.64	4	174.88
Aero Space							62	3167.58						
Automotive Tech.									43	2034.76				
Drafting Design							3	146.10	3	146.10				
Electronics											38	1380.54		
Nursing													36	1798.56
Government	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22
History	6	171.00												
Psychology			5	135.40	2	54.16	2	54.16	2	54.16	2	54.16	7	189.56
Sociology													3	86.49
Electives	20	745.40	3	11.81										
Totals (2 year)	64	2564.30	67	2293.45	67	2453.83	89	4314.18	73	3275.98	69	2643.01	71	3101.78
Annual Average	32	1282.15	33.5	1146.73	33.5	1226.92	44.5	2157.09	36.5	1637.99	34.5	1321.51	35.5	1550.89
Cost/Stud.Cr.Hr.		40.07		34.23		36.62		48.48		44.88		38.30		43.69
Cost Differentials		1.00		.85		.91		1.21		1.12		.96		1.09

TABLE 3-11 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE B

	Architectural Technology		Automotive Technology		Data Processing		Dental Assisting		Law Enforcement		Mid-Marketing Management		Refrigeration & Air Conditioning	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Business Adm.			6	174.18	15	435.45					18	522.54		
Office Occupations							6	216.00						
Economics											3	85.56		
Data Processing					28	1411.20					3	151.20		
English	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98	6	319.98
Speech			3	94.62	3	94.62	3	94.62	3	94.62				
Physical Education	2	109.38	2	109.38	2	109.38	2	109.38	4	218.76	2	109.38	2	109.38
Biology							7	255.71						
Mid-Management											9	506.07		
Physical Science	12	524.64	8	349.76	4	174.88			8	349.76			8	349.76
Automotive Tech.			23	1088.36										
Drafting	36	1753.20	10	487.00										
Electronics													12	435.96
Dental Assisting							25	1249.00						
Refrig.&Air Cond.													37	1555.48
Government	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22	6	167.22
Law Enforcement									24	845.76				
Psychology	2	54.16	2	54.16	2	54.16	7	189.56	5	135.40	5	135.40	2	54.16
Sociology									3	86.49				
Electives			3	111.81	3	111.81	3	111.81	9	335.43	12	447.24		
Totals (2 year)	64	2928.58	69	2956.47	69	2878.70	65	2713.28	68	2553.42	64	2444.59	73	2991.94
Annual Average	32	1464.29	34.5	1478.24	34.5	1439.35	32.5	1356.64	34	1276.71	32	1222.30	36.5	1495.97
Cost/Stud.Cr.Hr.		45.76		42.85		41.72		41.74		37.55		38.20		40.99
Cost Differential		1.14		1.07		1.04		1.04		.94		.95		1.02

TABLE 3-12

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE J

	Liberal Arts (General Curriculum)		Business Adminis-tration		Business Career Accounting		Executive Secretary		Electronics Technology		Mechanics Technology		Nursing, A.A.	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Biological Science	3	153.39	3	153.39	3	153.33	3	153.39					9	460.17
Business Admin.			21	1039.08	24	1187.52	3	148.44						
Data Processing					3	274.05								
Electronics									31	2022.13				
English	6	308.76	6	305.76	9	458.64	12	611.52	9	458.64	9	458.64	6	305.76
Mathematics	6	312.12	3	156.06	3	156.06	3	156.06	9	468.18	6	312.12		
Mechanical Tech.									2	113.22	26	1471.86		
Modern Languages	6	368.82												
Nursing													30	2444.70
Physical Education	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32
Physics & Engr.	3	125.70	3	125.70	3	125.70	3	125.70	8	335.20	12	502.80		
Secretarial Sci.					1	68.24	31	2115.44						
Social Science	12	511.24	12	511.24	9	387.18	6	258.12	9	387.18	9	387.18	12	511.24
Humanities Elect.	12	594.36												
Electives	12	658.20	12	658.20	6	329.10	3	164.55					6	329.10
Totals (2 year)	64	3228.91	64	3058.75	65	3339.20	70	3932.54	72	3980.87	66	3331.92	67	4255.29
Annual Average	32	1614.46	32	1529.38	32.5	1669.60	35	1966.27	36	1990.44	33	1665.96	33.5	2127.55
Cost/Stud.Cr.Hr.		50.45		47.79		51.37		56.18		55.29		50.48		63.51
Cost Differentials		1.00		.95		1.02		1.11		1.10		1.00		1.26

TABLE 3-12 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE J

	Audio-Visual Technology		Biological-Engineering Technology		Civil Technology		Data Processing		Dental Hygiene		Medical Laboratory Technology		X-Ray Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Biological Science	3	153.39					3	153.39	11	562.43	12	613.56	6	306.72
Bio-Medical Tech.			31	5222.57										
Business Admin.							6	296.88						
Data Processing			3	274.05			31	2831.35			3	274.05		
Electronics			4	260.92										
English	9	458.64	9	458.64	9	458.64	9	458.64	6	305.76	6	305.76	6	305.76
Mathematics	3	156.06	6	312.12	6	312.12	9	468.18			3	156.06	3	156.06
Civil Technology					37	2501.22								
Dental Hygiene									29	2975.69				
Medical Lab. Tech.											17	2244.51		
X-Ray Technology													49	4659.90
Physical Education	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32	4	199.32
Physics & Engr.	3	125.70	4	167.60	8	335.20							3	125.70
Chemistry											16	1443.20		
Social Science	9	387.18	3	129.06	9	387.18	6	258.12	12	511.24	3	129.06	6	258.12
Audio-Visual Tech.	30	4572.30												
Electives	3	165.55	3	164.55					6	329.10	3	164.55		
Totals (2 year)	64	6217.14	67	7188.83	73	4193.68	68	4665.88	68	4883.54	67	5530.07	77	6011.58
Annual Average	32	3108.57	33.5	3594.42	36.5	2096.84	34	2332.94	34	2441.77	33.5	2765.04	38.5	3005.79
Cost/Stud.Cr.Hr.		97.14		107.30		57.45		68.62		71.82		82.54		78.07
Cost Differentials		1.93		2.13		1.14		1.36		1.42		1.64		1.55

remaining cost ratios greater than one. Audio-visual technology, a program not seen in most community junior colleges, had a cost differential of 1.93, the second highest of the selected programs. The cost differentials for electronics technology and civil technology at 1.10 and 1.14, respectively were unusually small compared to other colleges but again was due to unusually high enrollments in the respective programs.

A course outline for only eight programs was available from College D. The data for the programs, given in Table 3-13, show that the cost differentials for three occupational programs, (all in the area of business) differed very little from unity. These ratios, 1.01 for business career accounting, 1.02 for business administration, and 1.04 for business career management, were very consistent and indicative of the similarity of programs in this area.

The highest Cost differential for any program was 1.86 for Associate Degree nursing, with electronics engineering having the second highest at 1.28.

College I had occupational programs with cost differentials ranging from .98 to 1.51 as shown in Table 3-14. Three programs, business administration, secretarial science and real estate had cost differentials of less than one.

The cost differentials were very consistent in College I, showing a relatively small range compared to other colleges. This is usually apparent in larger colleges that have been established for a number of years, as the enrollment tends to maximize in the majority of programs.

The liberal arts program at College G consisted of 66 semester hours. This is womewhat higher than found in the average community junior college, and thus the cost per student credit hour for liberal arts tends to be high, compared to other programs in the college. In comparison to specific

TABLE 3-13

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE D

	Liberal Arts (General Curriculum)		Business Adminis-tration		Business Career Accounting		Business Career Management		Executive Secretary		Electronics Engineering		Nursing R.N.	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
English	15	354.60	12	283.68	9	212.76	9	212.76	9	212.76	9	212.76	9	212.76
Business			6	154.14	3	77.07	12	308.28						
Business Adm.			6	141.60	18	424.80	18	424.80	9	212.40				
Accounting			6	144.12	12	282.24	3	72.06						
Secretarial Sci.									27	840.24				
Foreign Language	6	157.02												
Art	3	60.39												
Music	3	55.59												
Science			8	190.48									3	71.43
Physics											8	222.32		
A P C													8	211.52
Physical Science					6	120.36	6	120.36	6	120.36				
Biology	8	200.96												
Social Science			6	128.22	6	128.22			3	64.11	12	256.44		
History	12	238.56	6	119.18									3	59.64
Sociology	3	66.57			6	133.14	6	133.14	6	133.14			3	66.57
Psychology	6	143.88											6	143.98
Economics	6	142.74												
Mathematics	6	136.98	6	136.98										
Electro. Mech.											37	1235.80		
Nursing													33	1987.59
Electives							6	150.48						
Totals (2 year)	62	1414.55	62	1441.24	60	1384.59	60	1421.88	60	1583.01	66	1927.32	65	2753.39
Annual Average	31	707.28	31	720.62	30	692.30	30	710.94	30	791.51	33	963.66	32.5	1376.70
Cost/Stud.Cr.Hr.		22.82		23.25		23.08		23.70		26.38		29.20		42.36
Cost Differentials		1.00		1.02		1.01		1.04		1.16		1.28		1.86

TABLE 3-13 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS
FOR SELECTED CURRICULA IN COLLEGE D

	Electro-Mechanical Engineering	
Division	Cr. Hrs.	$ Cost
English	9	212.76
Business		
Business Adm.		
Accounting		
Secretarial Sci.		
Foreign Language		
Art		
Music		
Science		
Physics	8	222.32
A P C		
Physical Science		
Biology		
Social Science	12	256.44
History		
Sociology		
Psychology		
Economics		
Mathematics	8	182.64
Electro. Mech.	29	968.60
Nursing		
Electives		
Totals (2 year)	66	1842.76
Annual Average	33	921.38
Cost/Stud. Cr.Hr.		27.92
Cost Differentials		1.22

TABLE 3-14

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE I

	Liberal Arts (General Curriculum)		Airframe Technology		Business Administration		Secretarial Science		Cosmetology		Nursing, R.N.		Electronics Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Cosmetology									48	2638.56				
Foreign Language	6	210.78												
Business Education					37	1261.70	44	1500.40	2	68.20				
Fine Arts	6	214.44							2	71.48	2	71.48		
English	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16
Life Science	5	208.25									9	374.85		
Math Engineering			3	105.31										
Physical Education	4	196.36	4	196.36	4	196.36	4	196.36	4	196.36	2	98.18	4	196.36
Physical Science	6	215.04	3	107.52										
Social Science	12	329.76	7	192.36	10	274.80	4	109.92	4	109.92	13	357.24	4	109.92
Technician													44	2163.92
Health Occupations											32	1980.80		
Aeronautics			43	1704.95										
Electives	19	691.03			6	218.22	6	218.22	2	72.74	3	109.11	6	218.22
Totals (2 year)	64	2274.82	66	2515.86	64	2229.06	64	2234.12	68	3366.42	67	3200.82	64	2897.58
Annual Average	32	1137.41	33	1257.93	32	1114.53	32	1117.06	34	1683.21	33.5	1600.41	32	1448.79
Cost/Stud.Cr.Hr.		35.54		38.12		34.83		34.91		49.51		47.77		45.27
Cost Differentials		1.00		1.07		.98		.98		1.39		1.34		1.27

TABLE 3-14 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS
FOR SELECTED CURRICULA IN COLLEGE I

	Real Estate		Data Processing		Dental Assistant		Drafting Technology		Machine Tools Technology		Manu-facturing Technology		Welding Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Business Education	40	1364.00	8	272.80										
English	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16	6	209.16
Math Engineering			3	105.31										
Physical Education	4	196.36	4	196.36	4	196.36	4	196.36	4	196.36	4	196.36	4	196.36
Social Science	7	192.36	9	247.32	4	109.92	4	109.92	4	109.92	4	109.92	4	109.92
Data Processing			24	1108.32										
Technician							39	1918.02	42	2065.56	25	1229.50	46	2262.28
Health Occupations					40	2476.00								
Electives	6	218.22	7	254.59	6	218.22	9	327.33	8	290.96	22	800.14	9	327.33
Totals (2 year)	63	2180.10	61	2393.86	60	3209.66	62	2760.79	64	2871.96	61	2545.08	69	3105.05
Annual Average	31.5	1090.05	30.5	1196.93	30	1604.83	31	1380.40	32	1435.98	30.5	1272.54	34.5	1552.53
Cost/Stud.Cr.Hr.		34.61		39.24		53.49		44.53		44.87		41.72		45.00
Cost Differentials		.97		1.10		1.51		1.25		1.26		1.17		1.27

occupational programs, as shown in Table 3-15, the cost differentials for business administration at .93, fire science technology at .90, law enforcement technology at .88, and engineering at 1.00, tend to be lower than are normally expected.

Air conditioning with a cost differential of 2.50 was the most expensive program in terms of cost per student credit hour. Mortuary science had the second highest cost ratio at 1.91 but again it should be noted that the program consisted of 92 semester hours, or a six semester course. If the cost differential would have been computed by using total program cost, the ratio would have been 2.66. This is another example of how cost differentials become inflated when the number of credit hours for the program is ignored and the ratio is computed on a total basis rather than on a student credit basis.

The cost differentials in Table 3-16 for College L, with the exception of the nursing program, have the smallest range of any college in the study. Nursing, with a ratio of 1.71, has a much higher cost per student credit hour than the next highest program, electronics technology, with a cost ratio of 1.30.

As was cited previously, the range of cost differentials tend to reduce in larger institutions that offer many programs. College L, one of the largest colleges in the study, offers a wide variety of programs to its students. Four of the programs utilized in this study had cost differentials of less than one, those being .99 for business, data processing, .96 for business information systems, .91 for business administration, and .93 for business career accounting.

TABLE 3-15

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COST, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE G

	Liberal Arts (General Curriculum)		Business Administration		Architecture Technology		Fire Science Technology		Electronics Technology		Mortuary Science		Nursing A. A.	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Mortuary Science											28	2203.88		
Nursing Education													38	1945.22
Architecture					34	1297.78								
Business Adm.			31	538.16			3	52.08			3	52.08		
Drama-Speech-Radio			3	69.85			3	65.85			3	69.85		
English-Journalism	12	219.48	12	219.48	12	219.48	6	109.74	3	54.87	12	219.48	6	109.74
Foreign Language	12	251.15												
Physical Education	4	113.52	2	56.76	3	89.14								
Psych-Sociology	3	50.76					3	50.76			3	50.76	15	253.80
Social Sciences	10	156.40	13	203.32	10	156.40	7	109.48	4	62.56	13	203.32	4	62.56
Biological Sciences	4	86.64									22	476.52	10	216.60
Chemistry	4	114.00									8	228.00	10	216.60
Geology	4	81.84												
Mathematics	9	160.38			9	160.38			3	53.46				
Physics-Engineering	4	83.68			8	167.36			6	125.52				
Data Processing			3	103.77										
Fire Technology							42	763.56						
Electronics									48	1210.56				
Totals (2 year)	66	1317.86	64	1187.34	76	2086.54	64	1151.47	64	1506.97	92	3499.89	83	2804.52
Annual Average	33	658.93	32	593.67	38	1043.27	32	575.74	32	753.49	46	1749.95	41.5	1402.26
Cost/Stud.Cr.Hr.		19.97		18.55		27.45		17.99		23.55		38.04		33.79
Cost Differentials		1.00		.93		1.38		.90		1.18		1.91		1.69

TABLE 3-15 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE G

	Air Conditioning		Data Processing		Dental Assistant Technology		Law Enforcement Technology		Mid-Management		Pre-Medical, Pre-Dentist		Engineering	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost.	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Business Adm.			3	52.08	6	104.16			6	104.16				
Drama-Speech-Radio							3	65.85	3	65.85				
English-Journalism	9	164.61	6	109.74	6	109.74	6	109.74	6	109.74	12	219.48	12	219.48
Physical Education							4	113.52			3	89.14	2	56.76
Psych-Sociology							9	152.28	6	101.52				
Social Science	7	109.48	4	62.56	4	62.56	13	203.32	3	46.92	13	203.32	13	203.32
Biological Science											12	259.92		
Chemistry											16	456.00	8	228.00
Mathematics			6	106.92							6	106.92	12	213.84
Physics-Engineering	5	104.60									8	167.36	19	397.48
Data Processing			33	1141.47					3	103.57				
Air Conditioning	38	2644.80												
Industrial Drafting	3	74.01												
Dental Assistant					36	921.96								
Law Enforce.Tech.							30	497.70						
Mid-Management									28	640.08				
Electives			12	234.12	9	175.59			9	175.59				
Totals (2 year)	62	3097.50	64	1706.89	61	1374.01	65	1142.41	64	1347.43	70	1498.14	66	1318.88
Annual Average	31	1548.75	32	853.45	30.5	687.01	32.5	571.21	32	673.72	35	749.07	33	659.44
Cost/Stud.Cr.Hr.		49.96		26.67		22.53		17.58		21.05		21.40		19.98
Cost Differentials		2.50		1.34		1.13		.88		1.05		1.07		1.00

TABLE 3-16

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE L

	Liberal Arts (General Curriculum)		Business Administration		Business Career Accounting		Executive Secretary		Mortuary Science		Electronics Technology		Nursing A. A.	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Fine Arts	6	133.62												
English	6	161.04	3	80.52	3	80.52	3	80.52	6	161.04	6	161.04	6	161.04
Foreign Language	12	412.32												
Physical Science	6	187.20												
Biology									12	378.36			10	315.30
Chemistry									4	112.92			4	112.92
Physics											8	235.12		
Mathematics	3	80.64			3	80.64					9	241.92		
Physical Education	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64
Sociology							6	166.98	3	83.49			3	83.49
Social Science	6	114.06	9	171.09	6	114.06	6	114.06	6	114.06	6	114.06	6	114.06
Education													3	108.87
Business Administ.			39	984.75	36	909.00	9	227.25	3	75.75				
Bus. Info. System			3	90.30	6	180.60	3	90.30						
Management									3	110.34				
Civil Engineering											2	81.50		
Electronics											35	1640.10		
Mortuary Science									33	1532.19				
Nursing													35	2460.85
Electives	22	643.50	1	29.25	1	29.25	1	29.25	1	29.25	1	29.25	1	29.25
Totals (2 year)	63	1828.02	63	1669.59	63	1708.35	63	2003.22	73	2693.04	69	2598.63	70	3481.42
Annual Average	31.5	914.01	31.5	834.80	31.5	854.19	31.5	1001.61	36.5	1346.52	34.5	1299.32	35	1740.71
Cost/Stud.Cr.Hr.		29.02		26.50		27.12		31.80		36.89		37.66		49.73
Cost Differentials		1.00		.91		.93		1.10		1.27		1.30		1.71

TABLE 3-16 (Continued)

AVERAGE STUDENT CREDIT HOUR COST, ANNUAL COSTS, AND COST DIFFERENTIALS FOR SELECTED CURRICULA IN COLLEGE L

	Civil Engineering		Electrical Distribution Technology		Business, Data Processing		Business Information System		Hotel-Motel Management		Food Service Management		Building Construction Technology	
Division	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost	Cr. Hrs.	$ Cost
Humanities									6	160.50	9	240.75		
English	3	80.52	6	161.04	6	161.04	6	161.04	6	161.04	6	161.04	6	161.04
Physics	4	117.56	8	235.12									4	117.56
Mathematics	6	161.28	9	241.92	9	241.92	3	80.64					6	161.28
Physical Education	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64	2	95.64
Social Science	6	114.06	6	114.06	6	114.06	9	171.09	6	114.06	6	114.06	6	114.06
Business Adm.					3	75.75	12	303.00	6	151.50	9	227.25		
Bus. Info. System					27	812.70	31	933.10						
Management					3	110.34			9	331.02	6	220.68		
Civil Engineering	42	1711.50	20	815.00									22	896.50
Electronics			23	1077.78										
Food Serv. Mgt.									31	1144.83	24	886.32		
Architectural Bldg.													17	644.64
Electives	7	204.75	1	29.25	13	380.25	1	29.25	1	29.25	1	29.25	1	29.25
Totals (2 year)	70	2485.31	75	2769.81	69	1991.70	64	1773.76	67	2187.84	63	1974.99	64	2219.97
Annual Average	35	1242.66	37.5	1384.91	34.5	995.85	32	886.88	33.5	1094.92	31.5	987.50	32	1109.99
Cost/Stud.Cr.Hr.		35.50		36.93		28.87		27.72		32.65		31.35		34.69
Cost Differentials		1.22		1.27		.99		.96		1.13		1.08		1.20

Conclusions

The cost differentials for 56 programs in fifteen community junior colleges are presented in Table 3-17. The average cost differential for each of the programs is also presented. A word of caution is appropriate at this point. Some of the averages were computed on relatively few cost differentials and in some cases only one was available; thus, the data cannot be construed to be completely representative of all similar programs. There were certain cost differential averages that might have been more meaningful if the median had been computed rather than the mean. This is true because of an extreme cost ratio among the program differentials. These extreme values were pointed out previously with the apparent reason for their exceptional deviation.

The average cost differential for a liberal arts program with an emphasis on science or engineering was 1.12. Seldom has it been possible to find in previous studies this type of comparison although it would appear to be logical to expect that a curriculmm heavily loaded with courses taught by specialized teachers would be more expensive.

Business administration programs with a cost differential of .99, and general business programs with a cost ratio of .91, were the only two of the 56 programs that had ratios of less than one. Accounting with a cost differential of 1.01 and business management with a ratio of 1.02 were the next lowest cost programs in terms of cost per student credit hour. All of these programs are heavily based upon business courses and thereby support the argument that business oriented programs are no more expensive to operate than a liberal arts, general curriculum program. This is not so say that business programs should no longer be classified as occupational oriented programs, but does support the concept that some programs should

TABLE 3-17

Cost differentials as a ratio of various programs to the unit cost of liberal arts, general curriculum during 1968-1969 in fifteen community junior colleges

Program	Community Junior College															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Ave.
Liberal Arts (General Curriculum)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Liberal Arts (Science & Engineering)			1.07		1.12		1.07						1.23			1.12
Automotive Mechanics		1.12				1.24								1.45		1.27
Automotive Technology	1.00	1.07											1.16			1.08
Building and Construction Technology													1.68			1.68
Business Administration	.90			1.02			.93	1.13	.98	.95	1.01	.91		1.04		.99
Business Management			1.00	1.04				1.04				.96	1.04			1.02
Civil Technology	1.28							1.55		1.14		1.22	1.76			1.39
Chemical Engineering Technology	1.96		2.52								1.86					2.11
Data Processing		1.04	1.36		1.11	1.40	1.34	1.18	1.10	1.36	1.21	.99		1.56	1.42	1.26
Electrical Installation & Maintenance	1.35															1.35
Dental Assistant		1.04					1.13		1.51	1.42					1.69	1.36
Electrical Engineering Technology	1.79			1.22				1.19			1.54	1.27				1.40
Electronics Technology	1.24	.96	1.77	1.28	1.36	1.48	1.18	1.14	1.27	1.10		1.30	1.69		1.21	1.31
Hotel-Motel Management												1.13	1.23			1.18
Marketing & Mid-Management		.95			1.00	1.10	1.05		1.17		1.11		1.35		1.21	1.12

Table 3-17 (Continued)

Cost differentials as a ratio of various programs to the unit cost of liberal arts, general curriculum during 1968-1969 in fifteen community junior colleges

Program	Community Junior College															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Ave.
Mechanical Drafting														2.33		2.33
Industrial Engineering Technology	1.32															1.32
Mechanical Technology	1.68		1.34		1.38	1.80		1.29		1.00			1.77			1.47
Machinist	1.30								1.26					1.30		1.29
Medical Assistant										1.64	1.41					1.53
Mental Health Technology													1.47			1.47
Nursing, A.A.		1.09	1.77	1.86		2.03	1.69	1.34	1.34	1.26	1.12	1.71	1.43	1.53	1.40	1.51
Secretary, Medical			1.07			1.09		1.20							1.42	1.20
Radio-Television Technician			1.70			1.62										1.66
Mechanical Technician Design			1.42		1.50						1.75					1.56
Architectural Design Technology		1.14				1.70	1.38				1.65				1.32	1.44
Refrigeration, Heating & Air-conditioning	1.14	1.02					2.50									1.55
Secretary, Legal			.99					1.20								1.10
Secretarial Science	.93	.91	.97		1.33				.98		1.14		1.18	1.12	1.13	1.08
Tool & Die Making	1.40															1.40

Table 3-17 (Continued)

Cost differentials as a ratio of various programs to the unit cost of liberal arts, general curriculum during 1968-1969 in fifteen community junior colleges

	Community Junior College															
Program	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Ave.
Welding									1.27					1.21		1.24
Commercial Art											1.44					1.44
Nursery Education								.97			1.33					1.15
Police Science		.94					.88				2.20		1.08		1.06	1.23
Air Frame Technology									1.07							1.07
Accounting, Science					1.27											1.27
Accounting		.85		1.01	1.24	1.03		.97		1.02		.93				1.01
Banking & Finance					1.19											1.19
General Business						.91										.91
X-Ray Technician										1.55						1.55
Aeronautical Engineering		1.21				1.45										1.33
Fire Science					1.38		.90									1.14
Culinary Arts (Chef)															2.01	2.01
Drafting & Design Technology									1.25						1.34	1.30
Cosmetology									1.39							1.39

Table 3-17 (Continued)

Cost differentials as a ratio of various programs to the unit cost of liberal arts, general curriculum during 1968-1969 in fifteen community junior colleges

	Community Junior College															
Program	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Ave.
Marketing-Retail Management					1.17											1.17
Building Construction Technology												1.20				1.20
Library Technician															1.88	1.88
Sheet Metal Worker						3.13										3.13
Biological-Engineering Technology										2.13						2.13
Mortuary Science							1.91					1.27				1.59
Supermarket, Food Distribution					1.58							1.08				1.33
Secretary, Executive				1.16				1.13		1.11		1.10				1.13
Audio Visual Technology										1.93						1.93
Respiration Therapy Technology															1.89	1.89

not be considered more expensive to operate merely because they are classified as occupational.

Twelve of the fifteen sample colleges offered a program in data processing. The average cost differential for this program was 1.26, ranging from .99 in College L to 1.56 in College N. Having a cost differential less than unity is the exception rather than the rule for data processing, even though the high enrollments in the majority of these programs tend to lower the cost per student credit hour.

A wide range existed in the cost differentials for dental assistant, from 1.04 in College B to 1.69 in College O. The difference in size of enrollment in this program at these two colleges was the chief contributing factor to the difference in the cost differentials.

An even greater range in cost differentials existed in electronics technology between College B and College C, with differentials of .96 and 1.77 respectively. Again, only one cost differential was less than unity with the average differential, based on 13 programs, being 1.31.

The average cost differential for the Associate Degree program in nursing was also based on 13 programs. The average differential of 1.51 for the program was computed from differentials ranging from 1.09 in College B to 2.03 in College F. This extremely wide variation in cost differentials point up the need for colleges to re-examine the operation of their nursing program so as to utilize the community resources to the fullest extent. College B and K with cost differentials of 1.09 and 1.12, respectively, in the nursing program reported a tremendous working relationship with their community hospitals and staff, utilizing personnel and facilities to provide an optimum program at a very reasonable cost.

An average cost differential of 1.08 for secretarial science does not

totally reflect the point that about fifty percent of these programs had differentials of less than one. Secretarial science as an occupational program is often funded in excess of a liberal arts program when in fact in many colleges this excess cost does not exist. A cost analysis of this type affords administrators, as well as legislators concerned with community college finance, the opportunity to compare various programs and to aid in their decisions concerning the relative costs of each.

Time will not be taken herein to develop comments about all of the listed programs. These few have been described briefly to provide an indication of some points which may be analyzed. Although these cost data do not necessarily represent the entire sample in all programs as was pointed out earlier, the data do provide an approximate measure of the program cost per student credit hour in similar institutions. Overall these differentials should be valuable as a normative basis for comparisons for currently operating programs in community junior colleges.

Capital Outlay

As mentioned previously in Part I, it was not possible to gather pertinent data concerning capital outlay from all the sample institutions. Maintaining such data was not a priority in some institutions; in others, especially in older and better established colleges, much equipment had been acquired from surplus properties and some had been donated by industry. The task of assigning a value to equipment was not always complete in these latter cases.

In view of this situation, the project staff has chosen to develop a range of percentages for the extra cost of equipment necessary for teaching in the various programs. These percentages, based on the sample data which were available combined with information collected from a review of current

literature, should provide reasonable guidelines to colleges developing new programs or expanding present ones.

Very few studies in recent years have attempted to utilize capital outlay expense in cost analysis or cost benefit studies. Several reasons are apparent for this deficiency: 1. Colleges that have been in operation for many years have had no need to keep up to date records on equipment since they were not required to provide depreciation schedules for auditing purposes. 2. Much of the equipment used in occupational programs in many colleges was "used" equipment, surplus property, or donated by industry making it difficult to assign a comparable dollar value on such equipment. 3. Several programs, data processing for example, have used rental equipment, and when the rental expense is computed as a part of the program operating cost, it inflates the cost differential tremendously. In the latter instance it is difficult to decide whether it is equitable to include rental expense but not appropriate capital outlay expense when making comparisons in program costs. 4. It is very difficult to get a panel of judges to agree on the length of time appropriate to depreciate the total equipment not to mention each price of equipment for a particular program. Parry (21) emphasized this point when he consulted four people in North Carolina with extensive experience in occupational education and was not able to obtain a universal agreement on the life expectancy of certain equipment. The range was from 10 to 20 years for most equipment with Parry using 13 years as an appropriate length of time for the purposes of his study.

Keene (15), in his study of Florida Community Junior Colleges, assumed a ten year life for all occupational equipment. In developing his model for program cost differentials in the community college, the depreciation

of equipment added 17.6 percent to the cost of occupational programs when compared to a general liberal arts curriculum. It is not accurate to assume, however, that all equipment has a useful life of 10 years in a community college, without regard to variables such as the number enrolled, the type of equipment being used and other factors.

In his study of program costs at East Los Angeles College, Wells (30) made no provision for depreciation and used all of the expense for capital outlay in one year as a one time charge. This procedure has the extreme disadvantage of inflating unproportionately those programs for which the equipment was purchased. This is perhaps worse than no depreciation at all!

Morsch (20), in a report prepared for the Bureau of Social Science Research, Inc., studied 20 community junior colleges across the United States. Of the twenty he visited, he found that none of the budgets he examined made proper allowances for depreciation, amortization or obsolescence, although equipment repair and replacement was shown as an expense when incurred.

When variable depreciation schedules are used to allocate capital outlay expense over a period of time for a total program, several approaches have been suggested. The Illinois Junior College Board,(27), a leader in iniating statewide cost studies, has adopted an eight year descending balance depreciation schedule. All capital outlay, except buildings and site, is depreciated on the following basis:

First year	- 12.5% for each of eight years
Second year	- 14.3% for each of seven years
Third year	- 16.7% for each of six years
Fourth year	- 20% for each of five years
Fifth year	- 25% for each of four years
Sixth year	- 33.3% for each of three years

Seventh year - 50.0% for each of two years

Eighth year - No depreciation

Although prepared at the secondary school level, the Dade County Board of Education, Dade County, Florida, has devised a depreciation schedule for equipment in vocational-technical programs that would be appropriate for community junior colleges. They utilize a curvilinear regression technique, utilizing the cost of upkeep and maintenance as well as a depreciation schedule. When the depreciated value of the piece of equipment reaches the same level as the expenditures for maintenance, the piece of equipment is to be replaced.

This latter technique seems to be the most reasonable and equitable method that the project staff has found. It should be noted, however, that this is a longitudinal study and one that takes careful planning and record keeping. The benefit of such a project however far outweighs the time needed. Some of the "expense" in occupational programs is not necessarily in the direct cost of equipment but in the indirect cost to students who were trained on obsolescent equipment.

The sample data relevant to capital outlay that were collected from the fifteen community junior colleges and that were applicable to differentiating among program costs were used to compile Table 3-18. These data were adapted from the study of Fowler (13). The percentages presented represent a range of additional expense found when the expense for amortization of equipment (based on an average of ten years for the purpose of illustration), maintenance of equipment, and replacement of equipment are considered.

TABLE 3-18

Range of Percentages for Additional Program Cost
Due to Inclusion of Capital Outlay

Program	Range in Percent Low	High
Liberal Arts		
Science	5	12
Business	3	15
Occupational (Small Laboratory)		
Business Administration	1	9
Secretarial Science	6	11
Commercial Art	2	8
Occupational (Medium Laboratory)		
Drafting	4	8
Chemical Technology	3	10
Electronics Technology	8	19
Mechanical Design Technology	7	11
Nursing, A.A.	2	9
Civil Technology	2	12
Occupational (Large Laboratory)		
Auto Mechanics	5	20
Data Processing	6	22
Welding	6	16
Mechanical Production Technology	4	16
Air Conditioning & Refrigeration	4	12
Machinist	10	21

A science oriented curriculum in a liberal arts program had additional expense for capital outlay ranging from five to 12 percent, compared to the program cost based on operating expense only. A liberal arts program utilizing additional equipment for business curricula had a range of additional costs from three to 15 percent.

In occupational programs that are categorized as having small laboratory space, the business administration curriculum had an increased program cost of from one to nine percent when capital outlay expense was included. The excess expense for capital outlay in secretarial science was shown to

be a six to 11 percent increase and in commercial art, a two to eight percent increase.

Medium sized laboratory programs in occupational education had a wider range of percents due to the extra cost for capital outlay than did small sized laboratory programs. The greatest range was for electronics technology, from eight percent to 19 percent. This wide range reflects in part the difference in how equipment for the electronics program was acquired. The college showing an additional 19 percent increase in cost of program due to capital outlay had purchased new equipment and equipped one of the finest electronics labs seen among the sample institutions. The college having an eight percent increase in program cost for electronics had an equal sized laboratory in terms of student stations, but had had much of the equipment donated from industry, purchasing only a limited amount with college funds.

The widest range of percents reflecting additional cost for capital outlay in large sized occupational labs was from five to 20 percent for auto mechanics and six to 22 percent for data processing. The high rental expense for data processing equipment causes this program to have the highest additional cost due to capital outlay than any of the programs investigated. Some institutions utilize the computer for both teaching and internal record keeping, thereby reducing the cost applicable to the data processing program, per se. When this is done the additional program expense for capital outlay is reduced to a range of six percent to 11 percent.

SUMMARY

A limited amount of information is available in the literature concerning the cost of capital outlay as it relates to program costs at the community

junior college level. Several studies were cited where attempts were made to include relevant capital outlay information, but most leave much to be desired. The particular problems lie in the inabllity to gain universal agreement on the useful life of equipment, as well as, the inability to place a dollar value upon used equipment, gifts, and surplus property.

The data received from most of the fifteen sample institutions in this study reflected a substantial increase in program cost when capital outlay was considered. For the purpose of illustration in this study, a ten year amortization schedule was used for initial capital outlay as well as for the additional expense for maintenance and replacement of equipment. The range of percents depicting the additional program costs were given for selected programs. The greatest additional program expense was for data processing, machinist and automobile mechanics.

The project staff would encourage community junior colleges to keep pertinent, relevant data on capital outlay. The expense for equipment is a definite contributing factor to program cost as well as to the decision whether to begin a new occupational program. Only when administrators have this information can they adequately make decisions concerning the development of new programs or the expansion of present ones.

PART IV

BUDGETARY ALLOCATIONS

A description of budgetary allocations and the distribution of the operating expense over the various allocations provide a significant means of analyzing the priorities that occur in community junior college budgets. Historically, the major portion of an operating budget has been for instructional salaries. Medsker (19) reported in a 1969 study of two year colleges that 52 percent of the operating budget was spent for instructional salaries, 11 percent went for general administration, 10 percent for operation and maintenance of plant and 9 percent for auxiliary services.

The data in Table 4-1, adapted from the study by Fowler (13), show the percent of budget allocations of eight of the 15 community junior colleges in this study.

TABLE 4-1

Percent of Budgetary Allocations for Eight Community Junior Colleges

Budget Category	Colleges								
	E	N	M	C	K	F	H	A	Ave.
	Percents Rounded to Nearest Whole Number								
Instructional Salaries	42	54	53	53	44	62	47	57	51
General Administration	15	12	15	8	8	4	9	8	10
Oper. & Main. of Facilities	15	12	8	10	12	10	9	12	11
Instructional Resources	9	4	4	5	4	4	10	3	5
Student Personnel Services	7	13	7	5	8	11	8	11	9
Supportive Instr. Costs	7	4	12	15	12	9	15	8	10
Auxiliary Services	6	2	0	4	12	0	3	3	4

The average percent expended for instructional salaries, general administration and operation and maintenance of facilities closely parallel the findings of Medsker. The only deviation of any significance is in auxiliary services and this is probably primarily due to variations in record keeping. As can be seen in Table 4-1, two of the eight colleges studied by Fowler did not have a budgetary category for auxiliary services.

A contingency table containing the percent of allocation for each budget category across the eight institutions was developed. The percents for auxiliary services were combined with those for instructional resources so that when the chi-square analysis was used, the expected frequencies in all cells would be five or greater. The hypothesis of whether the difference in percent of budgetary allocations differed more than would be expected from random sampling in a population in which the component costs were equally distributed was tested and refuted ($p < .01$). The variation of expense within budget categories across the eight institutions did not vary more than would be expected in a random distribution of such categorical expense.

Stated in another way, the range of the distribution of operational expense in the various budget categories across all institutions did not vary more than would be expected in a sample of institutions as conglomerate as this group. The consistency of the allocation of operating expense in these institutions further support the concept of their being "exemplary." Other institutions may find the budgetary patterns of these colleges valuable for normative purposes.

Percent of Allocation by Division

The percent of budgetary allocation for each division or department in the eight institutions discussed previously was computed and the data are

presented in Tables 4-2 through 4-9. These data were compiled by Fowler and provide valuable insight for the administration and staff of these institutions as to the distribution of budget category expense across the various divisions.

The data in Table 4-2 represent the percent of budget categorical expense for each division in College N. It will be noted that the percents sum to 100 percent across the budget categories for each division. If any discrepancy occurs, it is due to rounding errors. No averages for each of the budget categories were listed as they were presented previously in Table 4-1.

TABLE 4-2

Percent of Budget Categorical Expense
by Division in College N

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	12.27	12.73	4.03	13.84	47.60	6.90	2.63
English	12.20	12.66	4.01	13.77	46.14	8.59	2.62
Humanities	12.51	12.98	4.11	14.11	49.91	3.70	2.69
Mathematics	14.20	14.74	4.67	16.01	43.14	4.20	3.05
Science	12.62	13.10	4.15	14.24	47.81	5.36	2.71
Social Science	12.14	12.60	3.99	13.69	47.80	7.19	2.61
Business Educa.	12.33	12.80	4.05	13.91	47.85	6.41	2.65
Health Related	5.57	5.77	1.83	6.28	77.71	1.64	1.20
Technical	6.34	5.58	2.08	7.15	74.61	1.87	1.36
Vocational	7.96	8.27	2.62	8.98	68.10	2.36	1.71

An examination of Table 4-2 shows that the mathematics division in College N had the highest percent of expense for general administration, operation and maintenace of plant, instructional resources, student services and auxiliary services. In the category of instructional salaries, the division concerned with health related activities was the highest with 77.71 percent of its budget being paid to faculty. The English division had the highest percent of expense in the area of supportive instructional costs of any division, expending 8.59 percent of its operating budget in this category.

A particular trend appears in these data which is evident throughout all eight sample institutions studied. A large percent of the total spent on liberal arts was spent on general administration while a large percent of the total spent on occupational was spent on instructional salaries. This was also true, but not to as great a degree, in the areas of maintenance and operation of facilities, instructional resources and student services.

This general trend seems apparent in other budget categories of College N but was not as prevalent in the remainder of the colleges studied. This type of budget analysis should prove very helpful to those colleges which are interested in fulfilling the philosophy of the comprehensive community junior college. Striving for a reasonable equitable ratio in comprehensive services between college parallel and occupational programs needs to be approached not only from an enrollment basis, but also from an expenditure basis, keeping in mind, however, that certain programs are more expensive to operate, without direct regard to enrollment.

The data pertaining to the percent of budgetary allocations for the respective divisions in College K are given in Table 4-3.

TABLE 4-3

Percent of Budget Categorical Expense
by Division in College K

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	9.45	13.19	3.99	9.45	42.14	18.34	3.44
English	9.81	13.68	4.15	9.81	40.22	18.77	3.57
Humanities	9.45	13.19	3.99	9.45	42.14	18.34	2.44
Mathematics	8.67	12.10	3.67	8.67	46.58	17.16	3.16
Science	8.67	12.10	3.67	8.68	43.46	20.27	3.16
Social Science	10.43	14.57	4.41	10.44	40.16	16.20	3.80
Business Educa.	9.43	13.15	3.99	9.43	39.81	20.75	3.44
Health Related	6.05	8.45	2.56	6.06	55.40	19.28	2.21
Technical	5.13	7.16	2.17	5.09	53.26	25.27	1.87

The social science division is predominant in having the highest percent of expense in the categories of general administration, operation and maintenance of facilities, instructional resources, student and auxiliary services. The health related division had the highest percent of instructional salaries. No vocational program (one year certificates) were offered at College K. The administration indicated that new programs were being developed in the vocational areas and should commence during the 1969-70 academic year.

The data pertinent to the expense for health related instructional activities of College A could not be differentiated from the data in the technical division, thus it was not possible to present them categorically. The data relative to those budget categories and divisions of College A which were available are presented in Table 4-4. The division of social science once again reported the highest percent of expense in all budgetary

TABLE 4-4

Percent of Budget Categorical Expense
by Division in College A

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	5.71	8.61	2.05	7.65	70.63	3.10	2.26
English	8.77	13.23	3.15	11.75	54.86	4.77	3.47
Humanities	5.71	8.61	2.05	7.65	70.63	4.77	3.47
Mathematics	8.78	13.25	3.15	11.77	54.82	4.47	3.47
Science	8.14	12.28	2.92	10.91	58.11	4.42	3.22
Social Science	9.67	14.59	3.47	12.97	50.21	5.26	3.83
Business Educa.	9.01	13.59	3.23	12.07	53.65	4.89	3.56
Technical	6.44	9.72	2.31	8.63	63.98	6.37	2.55
Vocational	7.26	10.95	2.60	9.73	47.88	18.71	2.87

categories except instructional salaries and supportive instructional costs. In these latter two categories, arts and humanities report the highest percents for instructional salaries at 70.63 percent each with the vocational and technical divisions reporting the highest percents in supportive instructional costs with 18.71 and 6.37 percents respectively.

The budget categories, division titles and their respective percents of expense are given in Table 4-5 for College C. A large vocational program was offered at College C, but because of the record keeping procedure it was impossible to separate these categorical expenses from the technical program. The pattern mentioned previously concerning the greater expense in general administration for the liberal arts and transfer curricula when compared to the occupational programs continues to be prevalent. A higher percent of operating expense can be seen for the liberal arts divisions in

TABLE 4-5

Percent of Budget Categorical Expense
by Division in College C

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	7.98	10.10	4.68	5.06	50.61	17.94	3.64
English	8.54	10.81	5.01	5.41	48.14	18.19	3.90
Humanities	7.98	10.10	4.68	5.06	50.60	17.94	3.64
Mathematics	7.52	9.51	4.40	4.76	54.80	15.58	3.43
Science	8.32	10.53	4.88	5.27	49.25	17.96	3.80
Social Science	10.49	13.81	6.40	6.92	39.24	17.74	4.98
Business Educa.	9.78	12.37	5.73	6.20	45.88	15.59	4.46
Health Related	3.92	4.97	2.30	2.48	71.08	13.46	1.79
Technical	5.73	7.24	3.35	3.63	49.29	28.15	2.61

College C for operation and maintenance of plant, instructional resources, student services and auxiliary services, as well. The health related division continues to report the greatest percent of its operating budget expended for instructional salaries.

The data for College E, the fifth of eight colleges in Fowler's analysis are presented in Table 4-6. No cost information for the health related division or the vocational division were available on a separate basis. These data are reflected in conjunction with the allocation of percents for the technical division. The percent of total operating expense for the social science division again was reported as the highest in all budget categories except instructional salaries and supportive instructional costs. In the instructional salary category, the social science division was the lowest, expending only 28.90 percent. This tendency of

TABLE 4-6

Percent of Budget Categorical Expense
by Division in College E

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	15.93	16.08	10.02	7.43	35.14	10.18	5.22
English	14.74	14.88	9.27	6.87	40.12	8.58	5.54
Humanities	16.01	16.16	10.06	7.47	34.64	10.43	5.24
Mathematics	15.84	15.98	9.96	7.39	32.61	13.03	5.19
Science	13.39	13.51	8.41	6.24	41.48	12.59	4.38
Social Science	17.49	17.65	10.99	8.16	28.90	11.08	5.73
Business Educa.	15.79	15.94	9.93	7.36	31.63	14.18	5.17
Technical	10.39	10.48	6.53	4.84	47.36	17.00	3.40

the social science division to be high in most budget categories and relatively low in instructional salaries is accounted for in part by the large number of courses in a typical college which fall under the heading of social science. Social science classes are often large in enrollment, thereby reducing the necessity for as many teachers as other divisions may require. If it were possible to sub-divide the curricula in the social science division, and to keep adequate cost information on the various departments within the division, there would be a tendency to lower the percent of budgetary allocations that are now assigned at the division level (e.g. administration).

The data for College M relevant to budget categories and divisional areas are presented in Table 4-7. A particular aspect apparent in these data is the relatively high percents for auxiliary services. As seen in the Glossary of Terms in Appendix B, auxiliary services are defined as

TABLE 4-7

Percent of Budget Categorical Expense
by Division in College M

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	8.49	11.33	5.30	10.47	38.44	13.27	12.69
English	8.09	10.79	5.05	9.98	42.13	11.84	12.10
Humanities	8.47	11.29	5.28	10.44	36.59	15.28	12.65
Mathematics	7.04	9.39	4.39	8.68	51.87	8.09	10.52
Science	7.39	9.85	4.61	9.11	47.49	10.51	11.04
Social Science	8.90	11.87	5.55	12.97	36.68	12.73	13.30
Business Educa.	6.88	9.17	4.29	8.48	50.53	10.38	10.28
Health Related	5.48	7.30	3.42	6.75	53.92	14.94	8.19
Technical	5.24	6.99	3.27	6.46	53.11	17.09	7.83
Vocational	7.69	10.27	4.80	9.48	41.26	15.03	11.49

the expenses for fixed charges and certain student activities that are definitely considered operating expense. This is not the case here, however, as the additional expense shown in auxiliary services was for salaries of guidance counselors which in all other colleges was reported under the categories of student services and general administration.

No data pertaining to budgetary allocations for vocational programs were available in College H. As shown in Table 4-8, the health related and technical divisions are given in the cost for vocational programs included with the technical division. The arts and humanities divisions are also combined under the arts division. The same general pattern that has been discussed with previous colleges was apparent in College H. The social science division has the largest percents in the majority of

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TABLE 4-8

Percent of Budget Categorical Expense
by Division in College H

Division	General Adminis-tration	Oper.& Main. Facil.	Instr. Res.	Stud. Serv.	instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	9.50	8.65	9.70	7.75	45.39	15.43	2.54
English	9.87	9.00	10.10	8.06	44.37	15.94	2.65
Mathematics	10.00	9.11	10.22	8.16	40.96	18.88	2.68
Science	9.60	8.74	9.81	7.83	40.90	20.56	2.56
Social Science	10.36	9.43	10.58	8.45	41.39	17.02	2.77
Business Educa.	9.13	8.30	9.32	7.44	47.07	16.30	2.44
Health Related	5.81	5.28	5.93	4.74	68.85	7.83	1.55
Technical	7.15	6.51	7.30	5.83	52.56	18.73	1.91

categories, the health related division has the highest percent in the instructional salaries category, and the general administrative cost as a percent of the total budget for liberal arts was greater than the general administration expense for occupational. The inverse of this trend was true for instructional salaries as a large percent of the total spent for occupational was for instructional salaries.

The data for College F is presented in Table 4-9. No information for auxiliary services was available for College F, as that budget category did not appear in their records. The percents for general administration across all divisions were perceptibly lower than those noted in other colleges; the percents for instructional salaries were the highest of all colleges included in this analysis. This fact was the result of a different administrative design in College F, one which was not found in the other institutions.

TABLE 4-9

Percent of Budget Categorical Expense
by Division in College F

Division	General Adminis-tration	Oper. & Main. Facil.	Instr. Res.	Stud. Serv.	Instr. Salary	Sup. Instr. Costs	Aux. Serv.
Arts	3.56	10.94	4.52	11.10	64.76	6.13	0
English	3.67	10.32	4.66	11.43	65.04	4.98	0
Humanities	3.56	10.94	4.52	11.10	64.76	6.13	0
Mathematics	3.34	9.32	4.24	10.41	66.58	6.11	0
Science	2.84	8.91	3.60	8.84	68.49	8.32	0
Social Science	3.48	9.71	4.42	10.85	62.81	8.72	0
Business Educa.	3.55	9.90	4.51	11.06	61.98	9.01	0
Health Related	1.25	3.48	1.59	3.89	86.99	2.80	0
Technical	2.16	6.03	2.73	6.73	68.74	13.60	0
Vocational	2.23	6.21	2.83	6.94	66.86	14.93	0

Administrative duties of department heads were recompensed through released time rather than extra compensation. Also there were fewer chairmen since the faculty are responsible to a broadly defined, divisional chairman, rather than an immediate departmental supervisor. Student-faculty ratios in this institution were somewhat smaller also, providing a basis for additional faculty and salary expense.

SUMMARY

The percents of budgetary allocation for seven budget categories applied to various academic divisions were presented in this section. The division of social sciences rather consistently reported the highest percent of operational expense in the budget categories of general administration

operation and maintenance of facilities, instructional resources, student and auxiliary services. Colleges N and F were the exceptions to this conclusion; in these colleges the divisions of mathematics and English reported the higher percents in the above named categories.

The majority of institutions report that the percent of total budget allocated for general administration was predominantly higher in the liberal arts and transfer divisions than in the occupational divisions. The opposite was true for instructional salaries since most colleges reported a higher percent of operating expense allocated for these salaries in the occupational programs than in the liberal arts programs.

Generally speaking, the operation and maintenance of facilities was allocated a greater percent of the budget in the liberal arts divisions than in the occupational divisions. This fact was primarily caused by the unbalanced ratio between the two areas in terms of student enrollment and classroom utilization. This particular budget category should increasingly show a better balance between the two program areas as the community colleges continue to provide more occupational and service programs in relationship to those in liberal arts.

While a great deal of data is available for analyses such as these, there is still a need for all institutions to develop better methods of record keeping. The normative data reported in this section are valuable only to the extent that its limitations are understood.

PART V

SUMMARY

In order to obtain a defensible basis for discussing the future of community junior college development in the United States, fifteen exemplary community colleges located in seven states were examined in this study. These fifteen colleges were selected because persons in each state who were familiar with the community colleges of that state indicated that these institutions exemplified the kind of institution which may be expected to develop more universally during the next ten years. These selected community colleges provided a comprehensive program of studies which included freshman and sophomore courses comparable to those offered in a four year college or university at this level of education; occupational programs designed to provide individuals with job entry skills which include not only those understandings and attitudes appropriate at the technical, semi-professional, and mid-management levels of occupations but also those special manual skills associated with the skilled trades; as well as the variety of credit and non-credit courses useful to adults who have either completed their formal education or have passed the age for attending the secondary school. While all such courses and programs were not completely available in each of the 15 exemplary community colleges, the commitments of these institutions were to provide this comprehensive approach to education at this level.

These colleges were solicited for their cooperation and upon receiving approval, the researchers visited each college to assemble all available data which would be useful in answering several specific questions. These questions formed the focus for this investigation:

1) What target population may be served in the community junior colleges?

2) What are the current patterns of financial support?

3) What may be projected as the anticipated needs for supporting community colleges?

4) What are the cost differentials among the various programs?

In previous sections of this report each of these questions has been considered. This final section of the report will serve to summarize the findings of this study.

Target Population

The major consideration in projecting a target population for the community colleges of 1980 is the fact that these institutions as exemplified in the 15 colleges discussed herein will be serving the total community who are beyond high school age. Students who attend these institutions are not typical of the college age student as he is usually described. From one third to one half of the total enrollment are over 22 years of age and the age range extends from less than 17 to more than 75.

United States Census predictions of population growth by age group indicate that an increasing percentage of the total population will be in the 15 to 34 age groups. These are currently the age groups which produce the greatest portions of community college student enrollments. One might well expect an increasing community college enrollment in most communities if he considered only the youth; however, since these colleges have already demonstrated that they serve these young adults and older adults as well, it is important to consider the total population in developing projections for the 1980's.

The target population will be composed of the following groups of students:

1) Those youth who have completed high school and who are preparing for transfer to a four year degree program.

2) Those youth who are merely continuing their general education without specific purpose.

3) Those youth who are preparing for defined occupations which require two years of training beyond the high school.

4) Those youth who are preparing for a job which requires skills they do not have upon entering the community college.

5) Those youth who must attend any of the above programs on a part-time basis while they work.

6) Those youth whose unusual abilities have encouraged them to move through their formal education at a more rapid rate than is usual.

7) Those adults (beyond the usual college age) who have personal objectives for completing associate degrees, baccalaureate degrees, or graduate degrees.

8) Those adults who require mid-career vocational retraining.

9) Those adults needing or wanting to change their occupations.

10) Those adults who need further education than previously completed for personal, economic, social or other reasons.

11) Those adults needing refreshment or reemphasis upon the quality of living.

This target population among the fifteen colleges studied varied from a low of 3 persons enrolled per 1000 population to a high of 45 per 1000. The mean for this group of exemplary colleges is 21 persons per 1000, with a median ratio of 17 per 1000.

If this ratio is applied to the estimated population of the various states for 1970 and 1980, one can develop a projection of the possible community college enrollment for those years. Using the current Census Bureau projections, Series I & II, there should be about 4,000,000 community college students enrolled in fall of 1970. The American Association of Junior Colleges 1970 Directory indicates an expected enrollment for fall, 1970 of 2,500,000. There is obviously still a great deal of

growth potential. In examining the seven states included in this study one will note that California has already exceeded this 1970 projected ratio by more than 50 percent and Florida has almost reached the projected level for 1970; however, the other five states would need to increase their current enrollment by rather sizeable percents in order to reach this level.

One also may note that Florida's increase in making educational opportunity at this level available has occurred almost entirely during the past ten years and that similar increases have occurred in other states of recent date. It, then, is not outside the realm of probability that the 4,500,000 students who may be predicted for 1980, using a ratio of 20 to 1000, should be expected.

An examination of the upper potential would also be in order. If the opportunity in all states were to equal that which is currently available in one or two of the exemplary community colleges, then a ratio of 50 students per 1000 population would not be impossible. Using this as the zenith of potential, one may note that more than 12,000,000 students could be enrolled in one or more courses in a community college each year.

Presidents of the exemplary community colleges have indicated their awareness of current limitations and have reemphasized the community college commitment to comprehensive programs using the broad population needs. These commitments when accompanied with adequate financial support for the programs offered will contribute to the full implementation of the projections developed herein.

Some of the items which currently inhibit the exemplary colleges from adequately serving their potential student bodies are:

1) Geographic accessibility -

Some persons in the districts cannot get to a specific

location to attend classes. Attempts to alleviate this are aided by the development of multi-campus institutions and establishing centers away from the main campus.

2) Space limitations -

Some colleges have been forced to place limitations upon enrollments because there is not enough classroom and laboratory space available. In addition to construction of new facilities, attempts to provide better utilization of existing space include lengthening the college day even to a 24 hour schedule, using facilities on Saturdays and Sundays, emphasizing year-round operation, and more careful scheduling.

3) Parking limitations -

Several colleges reported that students found transportation problems, especially parking problems, to be an especially discouraging deterent to attendance. The suburban location of some campuses has made automobile travel the sole mode of transportation. Aside from providing additional parking spaces, the colleges will need to develop mass transportation connections with campuses as well as multi-campus operation.

4) Inadequate financial support for occupational programs and courses -

All colleges reported that little if any consideration has been given to the financial differential on the cost of various programs in the community college. The current patterns of financial support are based mainly on formulas which have been focused upon the overall cost of liberal arts education. Cost comparisons are most often made with university costs.

Little information and little attention has been given to the cost differentials among the various community college programs. For these reasons, the university parallel programs have often taken precedence in community colleges since they are obviously less expensive and since the occupational programs for the most part have been partially supported by them. In order to provide the occupational programs, it has often been necessary to develop enough university parallel programs from which to "steal" support. This situation will be corrected by the development of a more equitable formula for allocating funds to community colleges. There will also be a need to increase the level of state support as well as federal support for education at this level.

The target population may be expected to include a wide range of age level groups of persons who will use the community college to meet many educational needs. When the potential number of persons who may be served in 1980 is projected upon the current enrollments in exemplary community colleges, the ratio of students in each 1000 of the total population would represent almost twice as many students in 1980 as are now attending--4,500,000 students. However, if all states should provide education at this level in the same way as is now available in one or two of these colleges, the total could be as high as 12,000,000 students. The potential target population then is representative of the entire population who are beyond the high school age level and may range in number from 4,500,000 to 12,000,000 students.

There is a wide variety of patterns of support for community colleges among the fifty states. There is little commonality among the states in regard to sources of support for operating expenses or for capital outlay.

Although this particular investigation has not given specific attention to sources of financial support, one of the concomitant studies has provided basic information which is summarized here.

Arney's study (3) has shown that state contributions for community college support varies from 4 percent of the current operating funds up to 100 percent. He also pointed out that one half of the states which were supporting community colleges in 1967-68 provided less than 50 percent of the current operating funds.

The remainder of support came for the most part from local funds and from student fees. Student fees were the source of 20 percent or more of the current expense output in more than half of the states.

Federal funds have not provided a major source of support for community college programs up to the present time. While a few states report that federal funds are used for capital outlay and for special programs, there is a wide disparity among the states in regard to the part that the federal funds play in supporting the total community college program.

The current support patterns for community colleges are not the same as was commonly found a few years ago. There is more state support and a trend toward increasing support from this source. The need for a balance between local, state, and federal sources seems obvious although very little analysis of the proper balance has been considered as of this date.

The financial support of community colleges has usually come from four major sources: local, state, and federal tax sources plus student tuition. Supplementing these sources, but comparatively small in amount, are gifts and surplus funds from auxiliary services. The major source of support in the past has been local funds combined with student tuition--this has amounted to more than half the current operating funds. There is at present

however, a trend toward greater state support as well as an increasing emphasis upon federal support.

Anticipated Needs

The anticipated needs for supporting the community colleges will depend upon the extent of this development in the various states. If the target population is served in an adequate manner, the current enrollment found in a few states may be used to project the requirements for the future. The possibility that at least twice as many students will be served in community colleges as are currently served is considered to be a reasonable prediction. The potential for educational service is as high as almost six times the current enrollment.

This specific investigation has not provided direct attention to the anticipated needs. However, related research does provide a basis for developing certain conclusions which will provide some answers to these questions.

Fowler's study (13) of current operating costs for programs in community colleges indicate that the range of expenditures per student for the year 1968-69 was approximately $600 to $3700. A median cost of $1353 might be assumed as reasonable. If this is projected for the current enrollment of 2,000,000 students enrolled, one may assume a current annual expenditure of $2.7 billion nationwide.

Without considering any increasing costs, a straight line projection would result in an estimate of $6.2 billion for 1980. This is not, however, a sound basis for projecting needs. As has been pointed out, these current expenditure levels not only do not consider the cost differentials in the various programs but also do not provide adequately for current needs.

If it may be assumed that a much more adequate financial support program

will be developed, then the following anticipated needs should be considered:

1) The potential number of students to be served in community colleges will likely be at least twice the number currently enrolled, perhaps even as much as five or six times the current enrollment.

2) There will be an increasing emphasis upon occupational and career programs at this level. These are more expensive than the liberal arts (general) programs.

3) There will be larger numbers of older youth and young adults involved in the community college programs. These will be enrolled on part-time as well as full-time bases.

4) There will be increasing emphasis upon multi-campus colleges with services made available on a broad geographical basis.

5) There will be increased concern relative to recruiting students who might not otherwise be knowledgeable about this opportunity.

6) There will be an increased emphasis upon intensive utilization of resources, and upon more carefully developed management information.

The anticipated needs for supporting community colleges are based upon financial needs which may be projected upon current expenditures. These would envision a 1980 expenditure of 6.2 billion in 1969 dollars. This figure, however, is not an adequate representation of the anticipated needs. Consideration must be given to the target population, the curriculums they need, and the ways in which more efficient, effective, and comprehensive education can be provided.

Cost Differential

Data collected from the 15 exemplary community colleges provide a basis for analyzing the cost differentials among the various programs in these community colleges. Since all colleges do not keep records in the same manner, these data were somewhat difficult to ascertain as well as to analyze for comparative purposes. The decision to develop a ratio in each institution by using the average credit hour cost for liberal arts as a divisor produced a cost differential in each institution that was not

specifically related to the amount of expenditure. These ratios, then were used as a basis for comparison from institution to institution.

Fifty six programs in the 15 colleges were analyzed. The majority of the occupational programs cost more than the liberal arts programs. The average cost differentials range from .99 in business administration courses to 2.11 in chemical engineering technology programs. These averages were used only when three or more programs were identified in as many colleges. There were a few cost differentials reported even higher but these were found in only one college. These were 2.33 for a mechanical drafting program, 2.13 for a bio-engineering technology program, and 3.13 for a sheet metal worker program.

Several influences on cost differentials were noted as data for individual institutions were analyzed. For example, one college which was fairly large in enrollment consistently had smaller differentials. A primary factor influencing cost differentials was the enrollment. Since programs are of different length, that is some require two semesters, most four, but a few even five or six semesters, the total program cost may be greater than the cost differential which is equated on a cost per student credit hour. Non-credit courses were equated, of course, for this comparison.

The overall conclusions may be summarized as follows:

1) Most of the business oriented programs are comparable in cost to the liberal arts programs.

2) The liberal arts programs which emphasize science or engineering are more expensive than the general programs but less expensive than technical education programs.

3) Special requirements such as rent on data processing equipment causes some programs to report a high cost differential.

4) New programs often have a higher cost differential during early years than will be true later.

5) Consideration of expenditures for capital outlay will increase the cost of a program as much as 22 percent in data processing, 21 percent in a machinist program or 20 percent in automobile mechanics.

By analyzing cost differentials one is able to ascertain the relative costs which are incurred in the various programs of a comprehensive community college. It is clear that a college which offers more variety in its program will cost more to operate than one which is limited to the liberal arts programs. All occupational programs except those related to business are more expensive to operate than the general education programs. In some instances this differential is more than 100 percent higher. When an estimate of equipment costs are included, the differential is even greater. In those colleges which are beginning to approach a ratio representing an equal number of students in each type of program, the overall current operating expenditures will be larger than at present because of the higher costs per student of the occupational programs. These factors must also be considered in the estimates of future needs in the community college.

Other Cost Analyses

In addition to the cost differential, the researchers examined the budgetary allocations and the distribution of operating expense over various allocations in order to assess in some measure the priorities which appear to exist within the community colleges.

It was readily apparent that the cost of instructional salaries is the greatest operating expense. Over one half of the total expenditures are allocated to this purpose. Other categories include general administration--10 percent; instructional resources--5 percent; student personnel services--

9 percent; supportive instructional costs--10 percent; and auxiliary service--4 percent. There was an apparent similarity in these categories among the colleges which were analyzed.

When individual divisions were examined it became apparent that there were some differences between programs that remained consistent from college to college. The percent of the total budget spent on occupational programs when broken down indicated a higher percent of that budget category spent on instructional salaries than was true in the liberal arts and services. Conversely in the liberal arts there was allocated a greater portion of the budget category on administrative services than was found in the occupational courses. These relationships may be very much involved with enrollment relationships as well as program costs. Other services carried out by the college such as student personnel services, operation and maintenance of plant, and instructional resources are noted because the liberal arts and sciences budgets show a larger percent allocated to these items than in the case with the occupational programs. The reverse is true only in the category of instructional resources.

Corrick (9) noted that the major decisions in allocating resources in a community college were those decisions related to faculty salary. Matthews (17) concluded that positive relationships could be identified between percent of budget allocated to student personnel services and student completions of liberal arts programs as well as the percent of the total budget allocated to instructional salary and the employment of graduates on jobs related to the occupational area studied. Both of these studies indicate that decisions related to the allocation of resources to salaries would appear to be the most important decision in community college budget preparation.

Despite experiencing some difficulty in obtaining sufficient information for analyzing budget allocations, the researchers were able to identify certain budget categories and to analyze the allocations for these. Since instructional salaries make up the largest percentage of current operating costs, the determination of this item in the budgeting of available resources will have direct influence upon the total expenditures in a manner unrelated to availability of resources. This will be especially important wherever salary levels become negotiable items directly influenced by agents outside the college itself.

Recommendations

As a result of this study, the following recommendations are made:

1. Better data collecting methods should be developed.

2. Federal and state legislators should be encouraged to become familiar with the differentials in program cost and to recognize this information in determining appropriations.

3. Longitudinal studies initiated at college level to ascertain pertinent program and student data are very much needed.

4. There continues a need to construct models of support for community college education. Trends in current support patterns indicate that there is a tendency to deemphasize local support for this level of education.

5. As models of support for community colleges are developed, consideration should be given to those colleges on state borders in terms of their relationships to adjacent states and the extension of the college attendance district across state lines.

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APPENDIX

A

A.

_____ Department

FACULTY, SALARY, COURSE NO., ENROLLMENT BY DEPARTMENT

Unit of Credit Used: Quarter _____ Semester _____ Tri-mester _____

Instructor or other Professional Staff Member (1)	Total Annual Salary of Staff Member (2)	First Term				Second Term				Third Term				Fourth Term				% Time Instru. (19)	% Time Admin. (20)
		Course Name (3)	Course No. (4)	Con. Hrs. (5)	Enrollment (6)	Course Name (7)	Course No. (8)	Con. Hrs. (9)	Enrollment (10)	Course Name (11)	Course No. (12)	Con. Hrs. (13)	Enrollment (14)	Course Name (15)	Course No. (16)	Con. Hrs. (17)	Enrollment (18)		

B. Department Expenditures

	Account Code	Expenditures
1. Salary of Secretary Help		
2. Contracted Services		
3. Consultative Services		
4. Office Supplies		
5. Publications		
6. Professional Books and Mat.		
7. Audio-Visual Aids		
8. Guidance and Testing Supplies		
9. Library		
A. Books		
B. Periodicals		
10. Library Supplies		
11. Telephone and Telegraph		
12. Travel Expense		
13. Dues		
14. Postage		
15. Teaching Supplies*		
16. Other		

*Includes all materials and equipment replacement

B. Department Expenditures

	Account Code	Expenditures
1. Salary of Secretary Help		
2. Contracted Services		
3. Consultative Services		
4. Office Supplies		
5. Publications		
6. Professional Books and Mat.		
7. Audio-Visual Aids		
8. Guidance and Testing Supplies		
9. Library		
10. Library Supplies		
11. Telephone and Telegraph		
12. Travel Expense		
13. Dues		
14. Postage		
15. Teaching Supplies*		
16. Other		

*Includes all materials and equipment replacement

C. College Administration

1. President
2. Administrative Assistant
3. Director of Student Services
4. Director of Admissions
5. Business Manager
6. Registrar
7. Campus Dean
8. Division of Guidance
9. Counselor (1)
   (2)
   (3)
10. Director of Placement
11. Librarian
12. Board of Directors

Account Code	Salary	Office Expense	Total

D. Student Services

1. Salary of Secretarial Help
2. Contracted Services
3. General Supplies
4. Publications Expense
5. Professional Books and Mat.
6. Telephone and Telegraph
7. Travel Expense
8. Dues
9. Postage
10. Other

Account Code	Expense	Annual Depreciation

E_1 Physical Plant Expenditures

1. Supplies and Other Expenses

	Account Code	Expenditures
1. Water and Sewage		
2. Electricity		
3. Laundry & Dry Cleaning Supplies		
4. Supplies for Operation of Motor Vehicles		
5. Supplies for Grounds Upkeep		
6. Custodial Cleaning Supplies		
7. Custodial Paper Supplies		
8. Custodial Preservatives		
9. Custodial Restroom Supplies		
10. Electrical Supplies		
11. Pest Control Supplies		
12. Supplies for Repair & Restoration, Heat, & Ventilating Equipment		
13. Supplies for Repair & Restoration Plumbing Equipment		
14. Supplies for Repair & Restoration Electrical Equipment		
15. Supplies for Repair & Restoration of Other Equipment		
16. Supplies for Upkeep of Grounds		
A. Fertilizer		
B. Seed and/or Sod		
C. Other		
17. Supplies for Repair of Buildings		
18. Telephone and Telegraph		
19. Travel Expense		
20. Natural Gas		
21. Fuel Oil		
22. Replacement of Equipment		
23. Other		

E_2

2. Contracted Services:

	Account Code	Expenditures
1. Rent of Maintenance Equipment		
2. Garbage Disposal		
3. Laundry & Dry Cleaning		
4. Pest Control		
5. Repair & Restoration of Heating & Ventilating Equipment		
6. Repair & Restoration of Plumbing Equipment		
7. Repair & Restoration of Electrical Equipment		
8. Repair & Restoration of Other Equipment		
9. Upkeep of Grounds		
10. Upkeep of Buildings		
11. Other		

3. Salaries:

1. Salary of Director of Buildings and Grounds		
2. Salary of Custodians:		
A. Regular		
B. Overtime		
3. Salary of Part-Time Help		

4. Fixed Charges:

1. Insurance		
A. Boiler		
B. Building & Contents		
C. Motor Vehicles		
D. Robbery		
2. Workmen's Compensation Insurance		
3. Business Travel Accident		
4. Comprehensive Liability Insurance		
5. Board Contribution to College Work-Study Program		
6. Board Contribution to State Retirement		
7. Board Contribution to FICA		
8. Board Contribution to Employee Group Insurance Program		
9. Rent of Buildings & Land		
10. Taxes and or Special Assessments		
11. Fidelity Bond Premiums:		
A. Employee Blanket Bond		
B. Secretary's Bond		
C. Treasurer's Bond		

F. Capital Outlay by Department

	Expenditure	Annual Depreciation
1. Educational Furniture and Equipment		
2. Office Furniture and Equipment		
3. Construction and Maintenance Equipment		
4. Vehicles		
5. Library Books and Films		
6. Buildings and Fixed Equipment		
7. Land		
8. Other Structures		
9. Other		

G. Debt Service

1. Interest on Warrants not Paid for Lack of Funds		

H. Revenue Receipts

	Receipts	
1. Student Tuition		
2. Student Fees:		
a. In-District		
b. Out-of-District		
c. Out-of-State		
d. Laboratory Fees		
e. Application Fees		
f. Graduation Fees		
g. Transcripts		
h. Activity Fees		
i. Other		
3. Local Receipts		
a. Home County		
b. Participating Counties		
c. Other than Participating Counties		
d. Other County Support		
4. State Receipts		
a. Minimum Found. Program, etc.		
b. License Tag Fees, etc.		
c. Soc. Sec. and Ret. Matching		
d. Gross Util. Tax and Higher Education Bonds		
e. Other		
5. Federal Receipts		
a. Veterans Administration		
b. Department of Labor		
c. Department of Interior		
d. Dept. of Agriculture		
e. O.E.O.		
f. HEW		
g. Other		

H. (continued)

	Receipts	
6. Sales, Services, Room & Board		
a. Bookstore Sales		
b. Food Sales		
c. Housing Fees		
d. Vending Machine Commissions		
e. Rent of College Facilities		
f. Other Sales & Services		
7. Other Revenue		
a. Interest and Dividends		
b. Gain or Loss on Sale of Invest.		
c. Gifts from Individuals		
d. Gifts & Grants from Foundations		
e. Gifts & Grants from Corps.		
f. Gifts & Grants from Chair. Org.		
g. Fines and Penalties		
h. Miscellaneous Revenue		
i. Transfers		
8. Non-Revenue Receipts		
a. Proceeds from Loans		
b. Proceeds from Bonds--State		
c. Proceeds from Bonds--Dist.		
d. Proceeds from Sale of Fixed Assets		
e. Prior Year Refunds		

I.

VOCATIONAL - TECHNICAL PROGRAMS FOR 1968-1969

I. Name of Community Junior College: ____________________
Address: ____________________

II. Title of Program : ____________________

III. Enrollment: First Year ________ Second Year ________ Total ________

IV. Expenditures:

1.

	Acct. Code	1st Term	2nd Term	3rd Term	4th Term	TOTAL
1. Instructional Services						
a. Instructional Salaries Only						
b. Guid. & Couns. Salaries						
c. Local Supervision Salaries						
d. Instructional Supplies						
e. Rental of Instruct. Equip.						
f. Other						
2. Fixed Charges						
a. Rental of Bldgs. and Land						
b. Employer Share of FICA Retirement						
c. Other Fixed Charges						
3. Capital Outlay						
a. Educ. Furniture and Equipment						
b. Office Furniture and Equipment						
c. Construction and Maintenance Equip.						
d. Vehicles						
e. Library Books and Films						
f. Buildings and Fixed Equipment						
g. Land						
h. Other Structures and Improvements						
i. Other						
4. Equipment Maint. & Repair						
a. Repair & Servicing of Equip.						
b. Other Maint. & Repair						
5. Equipment & Remodeling						
a. Minor Equipment, Tools						
b. Minor Remodeling, Sch. Plant						
c. Other						
6. Other Operational Expenses						
a. Utilities (Inc. Telephone)						
b. Custod. or Janitor. Salaries						
c. Trainee Transportation						
d. Travel Exp. (Voc. Pers.)						
e. Other Misc. Expense						

J.

1. List the counties or local school districts in the community college district.

_____

_____

_____

_____

2. Number of square miles in the community college district? _____

3. Total census population of community college district? _____

4. Census population of community college district in 18-21 age range? _____

5. Total state census population? _____

6. State census population in 18-21 age range? _____

7. Full-time equivalent university parallel enrollment for freshmen, fall, 1967.

_____

8. Number from #7 who completed a program prior to fall, 1969. _____

9. Number from #8 who transmitted transcripts to an upper division school prior to fall, 1969. _____

10. Full-time equivalent occupational enrollment for freshmen, fall, 1967. _____

11. Number from #10 who completed their program by fall, 1969. _____

12. Number from #10 who are employed in a related job by fall, 1969. _____

13. Number of head count enrollment for all programs, 1968-69. _____

14. How much of states assessed evaluation lies in local community college district?

_____

15. What percent of states population (18-21 age range) lies within 40 miles of the community college? _____

16. Does the community college have dormitories?____ How many will they accommodate?____

17. Did community college survey the district to determine what needs exist? _____

How often is survey taken? _____

18. What percent of high school graduates in community college district attends the community college? _____

J. (continued)

19. List the entrance requirements to a university parallel program? _____

_____

_____

_____

20. List the entrance requirement to an occupational program? _____

_____

_____

21. Are the course offerings extensive enough to consider the community college comprehensive? _____ If not, in what areas is the curriculum deficient?

_____

_____

22. Name the courses offered in other community colleges in the state which are not offered in this community college? _____

_____

_____

_____

What are reasons these courses are not offered in this community college district?

_____

_____

23. What is attrition rate in university parallel programs? _____

_____. What is attrition rate in occupational programs? _____

_____

_____

24. Percent of district population in university parallel programs? _____ Percent of district population in occupational programs? _____ Percent of district population in compensatory programs? _____ Percent of population in adult and continuing education programs? _____

APPENDIX

B

GLOSSARY OF TERMS

Auxiliary services - A budget classification including expenditures for fixed charges and certain student activities. Excluded were such items as food service, bookstore, housing, student assistance and special research programs, unless they resulted in a deficit chargeable to the institutional operating expenses.

Capital outlay - An expenditure which results in the acquisition of buildings, site, and initial or additional equipment.

College parallel student - Any student who pursues an Associate in Arts program of studies designed to prepare him for admission to the upper division (junior level) of a baccalaureate degree granting institution.

Community junior college - An institution which is supported by public tax funds, which is controlled and operated by a board, either elected or appointed by a public official or agency, and which offers programs and/or courses limited to the first two years of post-high school education, including the university parallel programs and at least one of the two following ones, occupational education and continuing education. The terms "community junior college," "junior college," "public junior college," and "community college" are used interchangeably in this report.

Current operating expense - The expenditure for the current on-going program during the fiscal year, excluding cost of capital outlay and debt service.

Full-time equivalent student (FTE) - A hypothetical student who carries a number of credits that is considered standard for the institution concerned. In this report, one student carrying a course load of 15 semester hours was considered as one FTE.

Glossary of Terms (Continued)

General administration expense - A budget category that includes the cost of salaries and ancillary services necessary for college wide provision of administrative services.

Instructional resources expense - A budget category that includes the cost of operating the library or instructional materials center; more specifically the salaries, supplies, books, equipment, subscriptions and other expenses related to the instructional center.

Instructional salary expense - A budget category that includes the salaries and fringe benefits paid to professional staff for direct classroom or laboratory instruction.

Occupational student - Any student who is pursuing a course of studies, regardless of the length of these studies, that will prepare him occupationally for employment at the conclusion of his junior college program.

Operation and maintenance of plant expense - A budget category that includes all expense for the operation and maintenance of the facilities, including supplies, custodial salaries, utilities and repair of equipment used in the maintenance of the plant.

Service area - The total geographic area served by the institution.

Student credit hours - The sum of the products of the number of credit hours for each course and the number of students enrolled in the course, the enrollment being computed at the end of the first add and drop period as determined by the institution.

Student personnel services expense - A budget category that includes the cost of providing services involving direct contact with the student in such areas as counseling, guidance, placement and college activities.

Glossary of Terms (Continued)

Unit costs - The generalized, quantifiable value of the resources invested and expended, divided by a standard identifiable measure of output. In this study the student credit hour is used as the measure of output.